<110> REGENERON PHARMACEUTICALS, INC.

<120> RECEPTOR BASED ANTAGONISTS, AND METHODS OF MAKING
        AND USING

<130> REG 203-A

<140> USSN 09/313,942
<141> 1999-05-19

<150> 09/313,942
<151> 1999-05-19

<150> 60/101,858
<151> 1998-09-25

<160> 32

<170> FastSEQ for Windows Version 3.0

<210> 1
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Tag sequence

<400> 1
His His His His His His
 1   5

<210> 2
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> peptide derived from region near C-terminus of
        gp130

<400> 2
Cys Gly Thr Glu Gly Gln Val Glu Arg Phe Glu Thr Val Gly Met Glu
 1   5   10   15

<210> 3
<211> 16
<212> DNA
<213> Artificial Sequence

<220>
<223> Kozak sequence

<400> 3
cgccgccacc atggtg   16

<210> 4
<211> 10

```
      <212> PRT
      <213> Artificial Sequence

      <220>
      <223> J peptide

      <400> 4
Gly Gln Gly Thr Leu Val Thr Val Ser Ser
1               5                   10


      <210> 5
      <211> 11
      <212> PRT
      <213> Artificial Sequence

      <220>
      <223> J peptide

      <400> 5
Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
1               5                   10


      <210> 6
      <211> 10
      <212> PRT
      <213> Artificial Sequence

      <220>
      <223> linker sequence

      <400> 6
Gly Ala Pro Ser Gly Gly Gly Gly Arg Pro
1               5                   10


      <210> 7
      <211> 859
      <212> PRT
      <213> Homo sapiens

      <400> 7
Met Val Thr Leu Gln Thr Trp Val Val Gln Ala Leu Phe Ile Phe Leu
1               5                   10                  15
Thr Thr Glu Ser Thr Gly Glu Leu Leu Asp Pro Cys Gly Tyr Ile Ser
            20                  25                  30
Pro Glu Ser Pro Val Val Gln Leu His Ser Asn Phe Thr Ala Val Cys
        35                  40                  45
Val Leu Lys Glu Lys Cys Met Asp Tyr Phe His Val Asn Ala Asn Tyr
    50                  55                  60
Ile Val Trp Lys Thr Asn His Phe Thr Ile Pro Lys Glu Gln Tyr Thr
65                  70                  75                  80
Ile Ile Asn Arg Thr Ala Ser Ser Val Thr Phe Thr Asp Ile Ala Ser
            85                  90                  95
Leu Asn Ile Gln Leu Thr Cys Asn Ile Leu Thr Phe Gly Gln Leu Glu
            100                 105                 110
Gln Asn Val Tyr Gly Ile Thr Ile Ile Ser Gly Leu Pro Pro Glu Lys
        115                 120                 125
Pro Lys Asn Leu Ser Cys Ile Val Asn Glu Gly Lys Lys Met Arg Cys
    130                 135                 140
Glu Trp Asp Gly Gly Arg Glu Thr His Leu Glu Thr Asn Phe Thr Leu
145                 150                 155                 160
Lys Ser Glu Trp Ala Thr His Lys Phe Ala Asp Cys Lys Ala Lys Arg
```

2

```
                    165                    170                    175
Asp Thr Pro Thr Ser Cys Thr Val Asp Tyr Ser Thr Val Tyr Phe Val
                    180                    185              190
Asn Ile Glu Val Trp Val Glu Ala Glu Asn Ala Leu Gly Lys Val Thr
              195                    200              205
Ser Asp His Ile Asn Phe Asp Pro Val Tyr Lys Val Lys Pro Asn Pro
          210                    215              220
Pro His Asn Leu Ser Val Ile Asn Ser Glu Glu Leu Ser Ser Ile Leu
225                    230              235                    240
Lys Leu Thr Trp Thr Asn Pro Ser Ile Lys Ser Val Ile Ile Leu Lys
                    245              250                    255
Tyr Asn Ile Gln Tyr Arg Thr Lys Asp Ala Ser Thr Trp Ser Gln Ile
              260              265                    270
Pro Pro Glu Asp Thr Ala Ser Thr Arg Ser Ser Phe Thr Val Gln Asp
          275                    280              285
Leu Lys Pro Phe Thr Glu Tyr Val Phe Arg Ile Arg Cys Met Lys Glu
          290                    295              300
Asp Gly Lys Gly Tyr Trp Ser Asp Trp Ser Glu Glu Ala Ser Gly Ile
305                    310              315                    320
Thr Tyr Glu Asp Arg Pro Ser Lys Ala Pro Ser Phe Trp Tyr Lys Ile
                    325              330                    335
Asp Pro Ser His Thr Gln Gly Tyr Arg Thr Val Gln Leu Val Trp Lys
              340                    345              350
Thr Leu Pro Pro Phe Glu Ala Asn Gly Lys Ile Leu Asp Tyr Glu Val
          355                    360              365
Thr Leu Thr Arg Trp Lys Ser His Leu Gln Asn Tyr Thr Val Asn Ala
          370                    375              380
Thr Lys Leu Thr Val Asn Leu Thr Asn Asp Arg Tyr Leu Ala Thr Leu
385                    390              395                    400
Thr Val Arg Asn Leu Val Gly Lys Ser Asp Ala Ala Val Leu Thr Ile
                    405              410                    415
Pro Ala Cys Asp Phe Gln Ala Thr His Pro Val Met Asp Leu Lys Ala
              420                    425              430
Phe Pro Lys Asp Asn Met Leu Trp Val Glu Trp Thr Thr Pro Arg Glu
              435                    440              445
Ser Val Lys Lys Tyr Ile Leu Glu Trp Cys Val Leu Ser Asp Lys Ala
          450                    455              460
Pro Cys Ile Thr Asp Trp Gln Gln Glu Asp Gly Thr Val His Arg Thr
465                    470              475                    480
Tyr Leu Arg Gly Asn Leu Ala Glu Ser Lys Cys Tyr Leu Ile Thr Val
              485                    490              495
Thr Pro Val Tyr Ala Asp Gly Pro Gly Ser Pro Glu Ser Ile Lys Ala
          500                    505              510
Tyr Leu Lys Gln Ala Pro Pro Ser Lys Gly Pro Thr Val Arg Thr Lys
          515                    520              525
Lys Val Gly Lys Asn Glu Ala Val Leu Glu Trp Asp Gln Leu Pro Val
          530                    535              540
Asp Val Gln Asn Gly Phe Ile Arg Asn Tyr Thr Ile Phe Tyr Arg Thr
545                    550              555                    560
Ile Ile Gly Asn Glu Thr Ala Val Asn Val Asp Ser Ser His Thr Glu
                    565                    570              575
Tyr Thr Leu Ser Ser Leu Thr Ser Asp Thr Leu Tyr Met Val Arg Met
              580                    585              590
Ala Ala Tyr Thr Asp Glu Gly Gly Lys Asp Gly Pro Glu Phe Thr Phe
              595                    600              605
Thr Thr Pro Lys Phe Ala Gln Gly Glu Ile Glu Ser Gly Glu Pro Lys
          610                    615              620
Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu
625                    630              635                    640
Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr
              645                    650                    655
```

3

```
Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val
        660                 665                 670
Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val
        675                 680                 685
Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser
        690                 695                 700
Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu
705                 710                 715                 720
Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala
                725                 730                 735
Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro
        740                 745                 750
Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln
        755                 760                 765
Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala
        770                 775                 780
Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr
785                 790                 795                 800
Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu
                805                 810                 815
Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser
                820                 825                 830
Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser
        835                 840                 845
Leu Ser Pro Gly Lys His His His His His His
850                 855
```

<210> 8
<211> 592
<212> PRT
<213> Homo sapiens

<400> 8

```
Met Val Ala Val Gly Cys Ala Leu Leu Ala Ala Leu Leu Ala Ala Pro
1                 5                   10                  15
Gly Ala Ala Leu Ala Pro Arg Arg Cys Pro Ala Gln Glu Val Ala Arg
                20                  25                  30
Gly Val Leu Thr Ser Leu Pro Gly Asp Ser Val Thr Leu Thr Cys Pro
                35                  40                  45
Gly Val Glu Pro Glu Asp Asn Ala Thr Val His Trp Val Leu Arg Lys
        50                  55                  60
Pro Ala Ala Gly Ser His Pro Ser Arg Trp Ala Gly Met Gly Arg Arg
65                  70                  75                  80
Leu Leu Leu Arg Ser Val Gln Leu His Asp Ser Gly Asn Tyr Ser Cys
                85                  90                  95
Tyr Arg Ala Gly Arg Pro Ala Gly Thr Val His Leu Leu Val Asp Val
                100                 105                 110
Pro Pro Glu Glu Pro Gln Leu Ser Cys Phe Arg Lys Ser Pro Leu Ser
        115                 120                 125
Asn Val Val Cys Glu Trp Gly Pro Arg Ser Thr Pro Ser Leu Thr Thr
        130                 135                 140
Lys Ala Val Leu Leu Val Arg Lys Phe Gln Asn Ser Pro Ala Glu Asp
145                 150                 155                 160
Phe Gln Glu Pro Cys Gln Tyr Ser Gln Glu Ser Gln Lys Phe Ser Cys
                165                 170                 175
Gln Leu Ala Val Pro Glu Gly Asp Ser Ser Phe Tyr Ile Val Ser Met
                180                 185                 190
Cys Val Ala Ser Ser Val Gly Ser Lys Phe Ser Lys Thr Gln Thr Phe
        195                 200                 205
Gln Gly Cys Gly Ile Leu Gln Pro Asp Pro Pro Ala Asn Ile Thr Val
        210                 215                 220
```

4

```
Thr Ala Val Ala Arg Asn Pro Arg Trp Leu Ser Val Thr Trp Gln Asp
225                 230                 235                 240
Pro His Ser Trp Asn Ser Ser Phe Tyr Arg Leu Arg Phe Glu Leu Arg
            245                 250                 255
Tyr Arg Ala Glu Arg Ser Lys Thr Phe Thr Thr Trp Met Val Lys Asp
        260                 265                 270
Leu Gln His His Cys Val Ile His Asp Ala Trp Ser Gly Leu Arg His
        275                 280                 285
Val Val Gln Leu Arg Ala Gln Glu Glu Phe Gly Gln Gly Glu Trp Ser
    290                 295                 300
Glu Trp Ser Pro Glu Ala Met Gly Thr Pro Trp Thr Glu Ser Arg Ser
305                 310                 315                 320
Pro Pro Ala Glu Asn Glu Val Ser Thr Pro Met Gln Ala Leu Thr Thr
            325                 330                 335
Asn Lys Asp Asp Asp Asn Ile Leu Phe Arg Asp Ser Ala Asn Ala Thr
            340                 345                 350
Ser Leu Pro Val Gln Asp Ala Gly Glu Pro Lys Ser Cys Asp Lys Thr
        355                 360                 365
His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser
    370                 375                 380
Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg
385                 390                 395                 400
Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro
            405                 410                 415
Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala
        420                 425                 430
Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val
        435                 440                 445
Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr
    450                 455                 460
Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr
465                 470                 475                 480
Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu
            485                 490                 495
Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr Cys
        500                 505                 510
Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser
    515                 520                 525
Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp
    530                 535                 540
Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser
545                 550                 555                 560
Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala
            565                 570                 575
Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
            580                 585                 590

        <210> 9
        <211> 951
        <212> PRT
        <213> Homo sapiens


        <400> 9
Met Val Thr Leu Gln Thr Trp Val Val Gln Ala Leu Phe Ile Phe Leu
  1             5                 10                  15
Thr Thr Glu Ser Thr Gly Glu Leu Leu Asp Pro Cys Gly Tyr Ile Ser
            20                  25                  30
Pro Glu Ser Pro Val Val Gln Leu His Ser Asn Phe Thr Ala Val Cys
            35                  40                  45
Val Leu Lys Glu Lys Cys Met Asp Tyr Phe His Val Asn Ala Asn Tyr
    50                  55                  60
```

5

```
Ile Val Trp Lys Thr Asn His Phe Thr Ile Pro Lys Glu Gln Tyr Thr
65                  70              75                  80
Ile Ile Asn Arg Thr Ala Ser Ser Val Thr Phe Thr Asp Ile Ala Ser
                85              90                  95
Leu Asn Ile Gln Leu Thr Cys Asn Ile Leu Thr Phe Gly Gln Leu Glu
            100             105             110
Gln Asn Val Tyr Gly Ile Thr Ile Ile Ser Gly Leu Pro Pro Glu Lys
            115             120             125
Pro Lys Asn Leu Ser Cys Ile Val Asn Glu Gly Lys Lys Met Arg Cys
    130             135             140
Glu Trp Asp Gly Gly Arg Glu Thr His Leu Glu Thr Asn Phe Thr Leu
145             150             155             160
Lys Ser Glu Trp Ala Thr His Lys Phe Ala Asp Cys Lys Ala Lys Arg
            165             170             175
Asp Thr Pro Thr Ser Cys Thr Val Asp Tyr Ser Thr Val Tyr Phe Val
        180             185             190
Asn Ile Glu Val Trp Val Glu Ala Glu Asn Ala Leu Gly Lys Val Thr
        195             200             205
Ser Asp His Ile Asn Phe Asp Pro Val Tyr Lys Val Lys Pro Asn Pro
    210             215             220
Pro His Asn Leu Ser Val Ile Asn Ser Glu Glu Leu Ser Ser Ile Leu
225             230             235             240
Lys Leu Thr Trp Thr Asn Pro Ser Ile Lys Ser Val Ile Ile Leu Lys
            245             250             255
Tyr Asn Ile Gln Tyr Arg Thr Lys Asp Ala Ser Thr Trp Ser Gln Ile
            260             265             270
Pro Pro Glu Asp Thr Ala Ser Thr Arg Ser Ser Phe Thr Val Gln Asp
    275             280             285
Leu Lys Pro Phe Thr Glu Tyr Val Phe Arg Ile Arg Cys Met Lys Glu
    290             295             300
Asp Gly Lys Gly Tyr Trp Ser Asp Trp Ser Glu Glu Ala Ser Gly Ile
305             310             315             320
Thr Tyr Glu Asp Arg Pro Ser Lys Ala Pro Ser Phe Trp Tyr Lys Ile
            325             330             335
Asp Pro Ser His Thr Gln Gly Tyr Arg Thr Val Gln Leu Val Trp Lys
            340             345             350
Thr Leu Pro Pro Phe Glu Ala Asn Gly Lys Ile Leu Asp Tyr Glu Val
    355             360             365
Thr Leu Thr Arg Trp Lys Ser His Leu Gln Asn Tyr Thr Val Asn Ala
    370             375             380
Thr Lys Leu Thr Val Asn Leu Thr Asn Asp Arg Tyr Leu Ala Thr Leu
385             390             395             400
Thr Val Arg Asn Leu Val Gly Lys Ser Asp Ala Ala Val Leu Thr Ile
            405             410             415
Pro Ala Cys Asp Phe Gln Ala Thr His Pro Val Met Asp Leu Lys Ala
            420             425             430
Phe Pro Lys Asp Asn Met Leu Trp Val Glu Trp Thr Thr Pro Arg Glu
            435             440             445
Ser Val Lys Lys Tyr Ile Leu Glu Trp Cys Val Leu Ser Asp Lys Ala
    450             455             460
Pro Cys Ile Thr Asp Trp Gln Gln Glu Asp Gly Thr Val His Arg Thr
465             470             475             480
Tyr Leu Arg Gly Asn Leu Ala Glu Ser Lys Cys Tyr Leu Ile Thr Val
            485             490             495
Thr Pro Val Tyr Ala Asp Gly Pro Gly Ser Pro Glu Ser Ile Lys Ala
        500             505             510
Tyr Leu Lys Gln Ala Pro Pro Ser Lys Gly Pro Thr Val Arg Thr Lys
    515             520             525
Lys Val Gly Lys Asn Glu Ala Val Leu Glu Trp Asp Gln Leu Pro Val
    530             535             540
Asp Val Gln Asn Gly Phe Ile Arg Asn Tyr Thr Ile Phe Tyr Arg Thr
```

6

```
545                  550                    555            .        560
Ile Ile Gly Asn Glu Thr Ala Val Asn Val Asp Ser Ser His Thr Glu
                565                  570                  575
Tyr Thr Leu Ser Ser Leu Thr Ser Asp Thr Leu Tyr Met Val Arg Met
                580                  585                  590
Ala Ala Tyr Thr Asp Glu Gly Gly Lys Asp Gly Pro Glu Phe Thr Phe
                595                  600                  605
Thr Thr Pro Lys Phe Ala Gln Gly Glu Ile Glu Ser Gly Ala Ser Thr
        610                  615                  620
Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser
625                  630                  635                  640
Gly Gly Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu
                645                  650                  655
Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His
                660                  665                  670
Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser
                675                  680                  685
Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr Gln Thr Tyr Ile Cys
        690                  695                  700
Asn Val Asn His Lys Pro Ser Asn Thr Lys Val Asp Lys Lys Val Glu
705                  710                  715                  720
Pro Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro
                725                  730                  735
Glu Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys
                740                  745                  750
Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val
                755                  760                  765
Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp
        770                  775                  780
Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr
785                  790                  795                  800
Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp
                805                  810                  815
Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu
                820                  825                  830
Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg
                835                  840                  845
Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys
        850                  855                  860
Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp
865                  870                  875                  880
Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys
                885                  890                  895
Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser
                900                  905                  910
Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser
                915                  920                  925
Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser
        930                  935                  940
Leu Ser Leu Ser Pro Gly Lys
945                  950
```

        <210> 10
        <211> 332
        <212> PRT
        <213> Homo sapiens

        <400> 10
```
Met Val Thr Leu Gln Thr Trp Val Val Gln Ala Leu Phe Ile Phe Leu
 1               5                   10                  15
Thr Thr Glu Ser Thr Gly Glu Leu Leu Asp Pro Cys Gly Tyr Ile Ser
```

8

<210> 12
<211> 329
<212> PRT
<213> Homo sapiens

<400> 12

```
Ser Gly Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Cys
1               5                   10                  15
Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala Leu Gly Cys Leu Val Lys
            20                  25                  30
Asp Tyr Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu
        35                  40                  45
Thr Ser Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu
    50                  55                  60
Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr
65                  70                  75                  80
Lys Thr Tyr Thr Cys Asn Val Asp His Lys Pro Ser Asn Thr Lys Val
            85                  90                  95
Asp Lys Arg Val Glu Ser Lys Tyr Gly Pro Pro Cys Pro Ser Cys Pro
            100                 105                 110
Ala Pro Glu Phe Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys
        115                 120                 125
Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val
    130                 135                 140
Val Val Asp Val Ser Gln Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr
145                 150                 155                 160
Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu
            165                 170                 175
Gln Phe Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His
            180                 185                 190
Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys
            195                 200                 205
Gly Leu Pro Ser Ser Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln
    210                 215                 220
Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Gln Glu Glu Met
225                 230                 235                 240
Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro
            245                 250                 255
Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn
            260                 265                 270
Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu
            275                 280                 285
Tyr Ser Arg Leu Thr Val Asp Lys Ser Arg Trp Gln Glu Gly Asn Val
    290                 295                 300
Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln
305                 310                 315                 320
Lys Ser Leu Ser Leu Ser Leu Gly Lys
            325
```

<210> 13
<211> 108
<212> PRT
<213> Homo sapiens

<400> 13

```
Ser Gly Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp
1               5                   10                  15
Glu Gln Leu Lys Ser Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn
            20                  25                  30
```

9

Phe Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu
        35   40   45
Gln Ser Gly Asn Ser Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp
        50   55   60
Ser Thr Tyr Ser Leu Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr
65   70   75   80
Glu Lys His Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser
                85   90   95
Ser Pro Val Thr Lys Ser Phe Asn Arg Gly Glu Cys
                100   105

        <210> 14
        <211> 106
        <212> PRT
        <213> Homo sapiens

        <400> 14
Ser Gly Pro Lys Ala Ala Pro Ser Val Thr Leu Phe Pro Pro Ser Ser
1   5   10   15
Glu Glu Leu Gln Ala Asn Lys Ala Thr Leu Val Cys Leu Ile Ser Asp
        20   25   30
Phe Tyr Pro Gly Ala Val Thr Val Ala Trp Lys Ala Asp Ser Ser Pro
        35   40   45
Val Lys Ala Gly Val Glu Thr Thr Thr Pro Ser Lys Gln Ser Asn Asn
        50   55   60
Lys Tyr Ala Ala Ser Ser Tyr Leu Ser Leu Thr Pro Glu Gln Trp Lys
65   70   75   80
Ser His Arg Ser Tyr Ser Cys Gln Val Thr His Glu Gly Ser Thr Val
                85   90   95
Glu Lys Thr Val Ala Pro Thr Glu Cys Ser
                100   105

        <210> 15
        <211> 360
        <212> PRT
        <213> Homo sapiens

        <400> 15
Met Val Ala Val Gly Cys Ala Leu Leu Ala Ala Leu Leu Ala Ala Pro
1   5   10   15
Gly Ala Ala Leu Ala Pro Arg Arg Cys Pro Ala Gln Glu Val Ala Arg
        20   25   30
Gly Val Leu Thr Ser Leu Pro Gly Asp Ser Val Thr Leu Thr Cys Pro
        35   40   45
Gly Val Glu Pro Glu Asp Asn Ala Thr Val His Trp Val Leu Arg Lys
        50   55   60
Pro Ala Ala Gly Ser His Pro Ser Arg Trp Ala Gly Met Gly Arg Arg
65   70   75   80
Leu Leu Leu Arg Ser Val Gln Leu His Asp Ser Gly Asn Tyr Ser Cys
                85   90   95
Tyr Arg Ala Gly Arg Pro Ala Gly Thr Val His Leu Leu Val Asp Val
                100   105   110
Pro Pro Glu Glu Pro Gln Leu Ser Cys Phe Arg Lys Ser Pro Leu Ser
        115   120   125
Asn Val Val Cys Glu Trp Gly Pro Arg Ser Thr Pro Ser Leu Thr Thr
        130   135   140
Lys Ala Val Leu Leu Val Arg Lys Phe Gln Asn Ser Pro Ala Glu Asp
145   150   155   160
Phe Gln Glu Pro Cys Gln Tyr Ser Gln Glu Ser Gln Lys Phe Ser Cys
                165   170   175
Gln Leu Ala Val Pro Glu Gly Asp Ser Ser Phe Tyr Ile Val Ser Met

10

```
                   180                          185                          190
    Cys Val Ala Ser Ser Val Gly Ser Lys Phe Ser Lys Thr Gln Thr Phe
                   195                          200                          205
    Gln Gly Cys Gly Ile Leu Gln Pro Asp Pro Pro Ala Asn Ile Thr Val
                   210                          215                          220
    Thr Ala Val Ala Arg Asn Pro Arg Trp Leu Ser Val Thr Trp Gln Asp
    225                          230                          235                          240
    Pro His Ser Trp Asn Ser Ser Phe Tyr Arg Leu Arg Phe Glu Leu Arg
                                 245                          250                          255
    Tyr Arg Ala Glu Arg Ser Lys Thr Phe Thr Thr Trp Met Val Lys Asp
                   260                          265                          270
    Leu Gln His His Cys Val Ile His Asp Ala Trp Ser Gly Leu Arg His
                   275                          280                          285
    Val Val Gln Leu Arg Ala Gln Glu Glu Phe Gly Gln Gly Glu Trp Ser
                   290                          295                          300
    Glu Trp Ser Pro Glu Ala Met Gly Thr Pro Trp Thr Glu Ser Arg Ser
    305                          310                          315                          320
    Pro Pro Ala Glu Asn Glu Val Ser Thr Pro Met Gln Ala Leu Thr Thr
                                 325                          330                          335
    Asn Lys Asp Asp Asp Asn Ile Leu Phe Arg Asp Ser Ala Asn Ala Thr
                   340                          345                          350
    Ser Leu Pro Val Gln Asp Ala Gly
                   355                          360


         <210> 16
         <211> 315
         <212> PRT
         <213> Homo sapiens

         <400> 16
    Met Val Ala Val Gly Cys Ala Leu Leu Ala Ala Leu Leu Ala Ala Pro
    1                            5                           10                           15
    Gly Ala Ala Leu Ala Pro Arg Arg Cys Pro Ala Gln Glu Val Ala Arg
                   20                           25                           30
    Gly Val Leu Thr Ser Leu Pro Gly Asp Ser Val Thr Leu Thr Cys Pro
                   35                           40                           45
    Gly Val Glu Pro Glu Asp Asn Ala Thr Val His Trp Val Leu Arg Lys
         50                           55                           60
    Pro Ala Ala Gly Ser His Pro Ser Arg Trp Ala Gly Met Gly Arg Arg
    65                           70                           75                           80
    Leu Leu Leu Arg Ser Val Gln Leu His Asp Ser Gly Asn Tyr Ser Cys
                                 85                           90                           95
    Tyr Arg Ala Gly Arg Pro Ala Gly Thr Val His Leu Leu Val Asp Val
                   100                          105                          110
    Pro Pro Glu Glu Pro Gln Leu Ser Cys Phe Arg Lys Ser Pro Leu Ser
                   115                          120                          125
    Asn Val Val Cys Glu Trp Gly Pro Arg Ser Thr Pro Ser Leu Thr Thr
         130                          135                          140
    Lys Ala Val Leu Leu Val Arg Lys Phe Gln Asn Ser Pro Ala Glu Asp
    145                          150                          155                          160
    Phe Gln Glu Pro Cys Gln Tyr Ser Gln Glu Ser Gln Lys Phe Ser Cys
                                 165                          170                          175
    Gln Leu Ala Val Pro Glu Gly Asp Ser Ser Phe Tyr Ile Val Ser Met
                   180                          185                          190
    Cys Val Ala Ser Ser Val Gly Ser Lys Phe Ser Lys Thr Gln Thr Phe
                   195                          200                          205
    Gln Gly Cys Gly Ile Leu Gln Pro Asp Pro Pro Ala Asn Ile Thr Val
                   210                          215                          220
    Thr Ala Val Ala Arg Asn Pro Arg Trp Leu Ser Val Thr Trp Gln Asp
    225                          230                          235                          240
    Pro His Ser Trp Asn Ser Ser Phe Tyr Arg Leu Arg Phe Glu Leu Arg
```

11

```
                        245                250                    255
Tyr Arg Ala Glu Arg Ser Lys Thr Phe Thr Thr Trp Met Val Lys Asp
                260                265                    270
Leu Gln His His Cys Val Ile His Asp Ala Trp Ser Gly Leu Arg His
            275                280                285
Val Val Gln Leu Arg Ala Gln Glu Glu Phe Gly Gln Gly Glu Trp Ser
        290                295                    300
Glu Trp Ser Pro Glu Ala Met Gly Thr Thr Gly
305                    310                315

        <210> 17
        <211> 2085
        <212> DNA
        <213> Homo sapiens

        <220>
        <221> CDS
        <222> (1)...(2082)

        <400> 17
atg gtg aag cca tca tta cca ttc aca tcc ctc tta ttc ctg cag ctg      48
Met Val Lys Pro Ser Leu Pro Phe Thr Ser Leu Leu Phe Leu Gln Leu
  1               5                  10                  15

ccc ctg ctg gga gtg ggg ctg aac acg aca att ctg acg ccc aat ggg      96
Pro Leu Leu Gly Val Gly Leu Asn Thr Thr Ile Leu Thr Pro Asn Gly
             20                  25                  30

aat gaa gac acc aca gct gat ttc ttc ctg acc act atg ccc act gac     144
Asn Glu Asp Thr Thr Ala Asp Phe Phe Leu Thr Thr Met Pro Thr Asp
         35                  40                  45

tcc ctc agt gtt tcc act ctg ccc ctc cca gag gtt cag tgt ttt gtg     192
Ser Leu Ser Val Ser Thr Leu Pro Leu Pro Glu Val Gln Cys Phe Val
     50                  55                  60

ttc aat gtc gag tac atg aat tgc act tgg aac agc agc tct gag ccc     240
Phe Asn Val Glu Tyr Met Asn Cys Thr Trp Asn Ser Ser Ser Glu Pro
 65                  70                  75                  80

cag cct acc aac ctc act ctg cat tat tgg tac aag aac tcg gat aat     288
Gln Pro Thr Asn Leu Thr Leu His Tyr Trp Tyr Lys Asn Ser Asp Asn
                 85                  90                  95

gat aaa gtc cag aag tgc agc cac tat cta ttc tct gaa gaa atc act     336
Asp Lys Val Gln Lys Cys Ser His Tyr Leu Phe Ser Glu Glu Ile Thr
            100                 105                 110

tct ggc tgt cag ttg caa aaa aag gag atc cac ctc tac caa aca ttt     384
Ser Gly Cys Gln Leu Gln Lys Lys Glu Ile His Leu Tyr Gln Thr Phe
            115                 120                 125

gtt gtt cag ctc cag gac cca cgg gaa ccc agg aga cag gcc aca cag     432
Val Val Gln Leu Gln Asp Pro Arg Glu Pro Arg Arg Gln Ala Thr Gln
        130                 135                 140

atg cta aaa ctg cag aat ctg gtg atc ccc tgg gct cca gag aac cta     480
Met Leu Lys Leu Gln Asn Leu Val Ile Pro Trp Ala Pro Glu Asn Leu
145                 150                 155                 160

aca ctt cac aaa ctg agt gaa tcc cag cta gaa ctg aac tgg aac aac     528
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12

```
Thr Leu His Lys Leu Ser Glu Ser Gln Leu Glu Leu Asn Trp Asn Asn
                165                 170                 175

aga ttc ttg aac cac tgt ttg gag cac ttg gtg cag tac cgg act gac      576
Arg Phe Leu Asn His Cys Leu Glu His Leu Val Gln Tyr Arg Thr Asp
            180                 185                 190

tgg gac cac agc tgg act gaa caa tca gtg gat tat aga cat aag ttc      624
Trp Asp His Ser Trp Thr Glu Gln Ser Val Asp Tyr Arg His Lys Phe
            195                 200                 205

tcc ttg cct agt gtg gat ggg cag aaa cgc tac acg ttt cgt gtt cgg      672
Ser Leu Pro Ser Val Asp Gly Gln Lys Arg Tyr Thr Phe Arg Val Arg
        210                 215                 220

agc cgc ttt aac cca ctc tgt gga agt gct cag cat tgg agt gaa tgg      720
Ser Arg Phe Asn Pro Leu Cys Gly Ser Ala Gln His Trp Ser Glu Trp
225                 230                 235                 240

agc cac cca atc cac tgg ggg agc aat act tca aaa gag aac gcg tcg      768
Ser His Pro Ile His Trp Gly Ser Asn Thr Ser Lys Glu Asn Ala Ser
            245                 250                 255

tct ggg aac atg aag gtc ctg cag gag ccc acc tgc gtc tcc gac tac      816
Ser Gly Asn Met Lys Val Leu Gln Glu Pro Thr Cys Val Ser Asp Tyr
            260                 265                 270

atg agc atc tct act tgc gag tgg aag atg aat ggt ccc acc aat tgc      864
Met Ser Ile Ser Thr Cys Glu Trp Lys Met Asn Gly Pro Thr Asn Cys
            275                 280                 285

agc acc gag ctc cgc ctg ttg tac cag ctg gtt ttt ctg ctc tcc gaa      912
Ser Thr Glu Leu Arg Leu Leu Tyr Gln Leu Val Phe Leu Leu Ser Glu
    290                 295                 300

gcc cac acg tgt atc cct gag aac aac gga ggc gcg ggg tgc gtg tgc      960
Ala His Thr Cys Ile Pro Glu Asn Asn Gly Gly Ala Gly Cys Val Cys
305                 310                 315                 320

cac ctg ctc atg gat gac gtg gtc agt gcg gat aac tat aca ctg gac     1008
His Leu Leu Met Asp Asp Val Val Ser Ala Asp Asn Tyr Thr Leu Asp
                325                 330                 335

ctg tgg gct ggg cag cag ctg ctg tgg aag ggc tcc ttc aag ccc agc     1056
Leu Trp Ala Gly Gln Gln Leu Leu Trp Lys Gly Ser Phe Lys Pro Ser
            340                 345                 350

gag cat gtg aaa ccc agg gcc cca gga aac ctg aca gtt cac acc aat     1104
Glu His Val Lys Pro Arg Ala Pro Gly Asn Leu Thr Val His Thr Asn
            355                 360                 365

gtc tcc gac act ctg ctg ctg acc tgg agc aac ccg tat ccc cct gac     1152
Val Ser Asp Thr Leu Leu Leu Thr Trp Ser Asn Pro Tyr Pro Pro Asp
        370                 375                 380

aat tac ctg tat aat cat ctc acc tat gca gtc aac att tgg agt gaa     1200
Asn Tyr Leu Tyr Asn His Leu Thr Tyr Ala Val Asn Ile Trp Ser Glu
385                 390                 395                 400

aac gac ccg gca gat ttc aga atc tat aac gtg acc tac cta gaa ccc     1248
Asn Asp Pro Ala Asp Phe Arg Ile Tyr Asn Val Thr Tyr Leu Glu Pro
```

13

```
tcc ctc cgc atc gca gcc agc acc ctg aag tct ggg att tcc tac agg    1296
Ser Leu Arg Ile Ala Ala Ser Thr Leu Lys Ser Gly Ile Ser Tyr Arg
            420             425             430

gca cgg gtg agg gcc tgg gct cag tgc tat aac acc acc tgg agt gag    1344
Ala Arg Val Arg Ala Trp Ala Gln Cys Tyr Asn Thr Thr Trp Ser Glu
            435             440             445

tgg agc ccc agc acc aag tgg cac aac tcc tac agg gag ccc ttc gag    1392
Trp Ser Pro Ser Thr Lys Trp His Asn Ser Tyr Arg Glu Pro Phe Glu
            450             455             460

cag tcc gga gac aaa act cac aca tgc cca ccg tgc cca gca cct gaa    1440
Gln Ser Gly Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu
465             470             475             480

ctc ctg ggg gga ccg tca gtc ttc ctc ttc ccc cca aaa ccc aag gac    1488
Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp
                485             490             495

acc ctc atg atc tcc cgg acc cct gag gtc aca tgc gtg gtg gtg gac    1536
Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp
            500             505             510

gtg agc cac gaa gac cct gag gtc aag ttc aac tgg tac gtg gac ggc    1584
Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly
            515             520             525

gtg gag gtg cat aat gcc aag aca aag ccg cgg gag gag cag tac aac    1632
Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn
530             535             540

agc acg tac cgt gtg gtc agc gtc ctc acc gtc ctg cac cag gac tgg    1680
Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp
545             550             555             560

ctg aat ggc aag gag tac aag tgc aag gtc tcc aac aaa gcc ctc cca    1728
Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro
                565             570             575

gcc ccc atc gag aaa acc atc tcc aaa gcc aaa ggg cag ccc cga gaa    1776
Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu
            580             585             590

cca cag gtg tac acc ctg ccc cca tcc cgg gag gag atg acc aag aac    1824
Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn
            595             600             605

cag gtc agc ctg acc tgc ctg gtc aaa ggc ttc tat ccc agc gac atc    1872
Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile
            610             615             620

gcc gtg gag tgg gag agc aat ggg cag ccg gag aac aac tac aag acc    1920
Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr
625             630             635             640

acg cct ccc gtg ctg gac tcc gac ggc tcc ttc ttc ctc tat agc aag    1968
Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys
                645             650             655
```

14

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ctc acc gtg gac aag agc agg tgg cag cag ggg aac gtc ttc tca tgc       2016
Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys
            660             665                 670

tcc gtg atg cat gag gct ctg cac aac cac tac acg cag aag agc ctc       2064
Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu
            675             680             685

tcc ctg tct ccg ggt aaa tga                                           2085
Ser Leu Ser Pro Gly Lys
    690
```

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        <210> 18
        <211> 694
        <212> PRT
        <213> Homo sapiens

        <400> 18
Met Val Lys Pro Ser Leu Pro Phe Thr Ser Leu Leu Phe Leu Gln Leu
 1               5                  10                  15
Pro Leu Leu Gly Val Gly Leu Asn Thr Thr Ile Leu Thr Pro Asn Gly
            20                  25                  30
Asn Glu Asp Thr Thr Ala Asp Phe Phe Leu Thr Thr Met Pro Thr Asp
            35                  40                  45
Ser Leu Ser Val Ser Thr Leu Pro Leu Pro Glu Val Gln Cys Phe Val
        50                  55                  60
Phe Asn Val Glu Tyr Met Asn Cys Thr Trp Asn Ser Ser Ser Glu Pro
65                  70                  75                  80
Gln Pro Thr Asn Leu Thr Leu His Tyr Trp Tyr Lys Asn Ser Asp Asn
                85                  90                  95
Asp Lys Val Gln Lys Cys Ser His Tyr Leu Phe Ser Glu Glu Ile Thr
            100                 105                 110
Ser Gly Cys Gln Leu Gln Lys Lys Glu Ile His Leu Tyr Gln Thr Phe
        115                 120                 125
Val Val Gln Leu Gln Asp Pro Arg Glu Pro Arg Arg Gln Ala Thr Gln
    130                 135                 140
Met Leu Lys Leu Gln Asn Leu Val Ile Pro Trp Ala Pro Glu Asn Leu
145                 150                 155                 160
Thr Leu His Lys Leu Ser Glu Ser Gln Leu Glu Leu Asn Trp Asn Asn
                165                 170                 175
Arg Phe Leu Asn His Cys Leu Glu His Leu Val Gln Tyr Arg Thr Asp
            180                 185                 190
Trp Asp His Ser Trp Thr Glu Gln Ser Val Asp Tyr Arg His Lys Phe
            195                 200                 205
Ser Leu Pro Ser Val Asp Gly Gln Lys Arg Tyr Thr Phe Arg Val Arg
    210                 215                 220
Ser Arg Phe Asn Pro Leu Cys Gly Ser Ala Gln His Trp Ser Glu Trp
225                 230                 235                 240
Ser His Pro Ile His Trp Gly Ser Asn Thr Ser Lys Glu Asn Ala Ser
                245                 250                 255
Ser Gly Asn Met Lys Val Leu Gln Glu Pro Thr Cys Val Ser Asp Tyr
            260                 265                 270
Met Ser Ile Ser Thr Cys Glu Trp Lys Met Asn Gly Pro Thr Asn Cys
            275                 280                 285
Ser Thr Glu Leu Arg Leu Leu Tyr Gln Leu Val Phe Leu Leu Ser Glu
    290                 295                 300
Ala His Thr Cys Ile Pro Glu Asn Asn Gly Gly Ala Gly Cys Val Cys
305                 310                 315                 320
His Leu Leu Met Asp Asp Val Val Ser Ala Asp Asn Tyr Thr Leu Asp
```

15

```
                      325                     330                     335
Leu Trp Ala Gly Gln Gln Leu Leu Trp Lys Gly Ser Phe Lys Pro Ser
            340                     345                     350
Glu His Val Lys Pro Arg Ala Pro Gly Asn Leu Thr Val His Thr Asn
            355                     360                     365
Val Ser Asp Thr Leu Leu Leu Thr Trp Ser Asn Pro Tyr Pro Pro Asp
            370                     375                     380
Asn Tyr Leu Tyr Asn His Leu Thr Tyr Ala Val Asn Ile Trp Ser Glu
385                     390                     395                     400
Asn Asp Pro Ala Asp Phe Arg Ile Tyr Asn Val Thr Tyr Leu Glu Pro
                405                     410                     415
Ser Leu Arg Ile Ala Ala Ser Thr Leu Lys Ser Gly Ile Ser Tyr Arg
           ·420                     425                     430
Ala Arg Val Arg Ala Trp Ala Gln Cys Tyr Asn Thr Thr Trp Ser Glu
            435                     440                     445
Trp Ser Pro Ser Thr Lys Trp His Asn Ser Tyr Arg Glu Pro Phe Glu
            450                     455                     460
Gln Ser Gly Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu
465                     470                     475                     480
Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp
                485                     490                     495
Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp
            500                     505                     510
Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly
            515                     520                     525
Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn
            530                     535                     540
Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp
545                     550                     555                     560
Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro
                565                     570                     575
Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu
            580                     585                     590
Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn
            595                     600                     605
Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile
            610                     615                     620
Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr
625                     630                     635                     640
Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys
                645                     650                     655
Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys
            660                     665                     670
Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu
            675                     680                     685
Ser Leu Ser Pro Gly Lys
            690

        <210> 19
        <211> 2076
        <212> DNA
        <213> Homo sapiens

        <220>
        <221> CDS
        <222> (1)...(2073)

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Met Val Lys Pro Ser Leu Pro Phe Thr Ser Leu Leu Phe Leu Gln Leu
 1               5                   10                  15
```

```
ccc ctg ctg gga gtg ggg ctg aac acg aca att ctg acg ccc aat ggg      96
Pro Leu Leu Gly Val Gly Leu Asn Thr Thr Ile Leu Thr Pro Asn Gly
            20                  25                  30

aat gaa gac acc aca gct gat ttc ttc ctg acc act atg ccc act gac      144
Asn Glu Asp Thr Thr Ala Asp Phe Phe Leu Thr Thr Met Pro Thr Asp
            35                  40                  45

tcc ctc agt gtt tcc act ctg ccc ctc cca gag gtt cag tgt ttt gtg      192
Ser Leu Ser Val Ser Thr Leu Pro Leu Pro Glu Val Gln Cys Phe Val
            50                  55                  60

ttc aat gtc gag tac atg aat tgc act tgg aac agc agc tct gag ccc      240
Phe Asn Val Glu Tyr Met Asn Cys Thr Trp Asn Ser Ser Ser Glu Pro
65                  70                  75                  80

cag cct acc aac ctc act ctg cat tat tgg tac aag aac tcg gat aat      288
Gln Pro Thr Asn Leu Thr Leu His Tyr Trp Tyr Lys Asn Ser Asp Asn
                    85                  90                  95

gat aaa gtc cag aag tgc agc cac tat cta ttc tct gaa gaa atc act      336
Asp Lys Val Gln Lys Cys Ser His Tyr Leu Phe Ser Glu Glu Ile Thr
                100                 105                 110

tct ggc tgt cag ttg caa aaa aag gag atc cac ctc tac caa aca ttt      384
Ser Gly Cys Gln Leu Gln Lys Lys Glu Ile His Leu Tyr Gln Thr Phe
            115                 120                 125

gtt gtt cag ctc cag gac cca cgg gaa ccc agg aga cag gcc aca cag      432
Val Val Gln Leu Gln Asp Pro Arg Glu Pro Arg Arg Gln Ala Thr Gln
        130                 135                 140

atg cta aaa ctg cag aat ctg gtg atc ccc tgg gct cca gag aac cta      480
Met Leu Lys Leu Gln Asn Leu Val Ile Pro Trp Ala Pro Glu Asn Leu
145                 150                 155                 160

aca ctt cac aaa ctg agt gaa tcc cag cta gaa ctg aac tgg aac aac      528
Thr Leu His Lys Leu Ser Glu Ser Gln Leu Glu Leu Asn Trp Asn Asn
                165                 170                 175

aga ttc ttg aac cac tgt ttg gag cac ttg gtg cag tac cgg act gac      576
Arg Phe Leu Asn His Cys Leu Glu His Leu Val Gln Tyr Arg Thr Asp
                180                 185                 190

tgg gac cac agc tgg act gaa caa tca gtg gat tat aga cat aag ttc      624
Trp Asp His Ser Trp Thr Glu Gln Ser Val Asp Tyr Arg His Lys Phe
            195                 200                 205

tcc ttg cct agt gtg gat ggg cag aaa cgc tac acg ttt cgt gtt cgg      672
Ser Leu Pro Ser Val Asp Gly Gln Lys Arg Tyr Thr Phe Arg Val Arg
        210                 215                 220

agc cgc ttt aac cca ctc tgt gga agt gct cag cat tgg agt gaa tgg      720
Ser Arg Phe Asn Pro Leu Cys Gly Ser Ala Gln His Trp Ser Glu Trp
225                 230                 235                 240

agc cac cca atc cac tgg ggg agc aat act tca aaa gag aac ggg aac      768
Ser His Pro Ile His Trp Gly Ser Asn Thr Ser Lys Glu Asn Gly Asn
                245                 250                 255
```

17

```
atg aag gtc ctg cag gag ccc acc tgc gtc tcc gac tac atg agc atc          816
Met Lys Val Leu Gln Glu Pro Thr Cys Val Ser Asp Tyr Met Ser Ile
            260                 265                 270

tct act tgc gag tgg aag atg aat ggt ccc acc aat tgc agc acc gag          864
Ser Thr Cys Glu Trp Lys Met Asn Gly Pro Thr Asn Cys Ser Thr Glu
        275                 280                 285

ctc cgc ctg ttg tac cag ctg gtt ttt ctg ctc tcc gaa gcc cac acg         912
Leu Arg Leu Leu Tyr Gln Leu Val Phe Leu Leu Ser Glu Ala His Thr
        290                 295                 300

tgt atc cct gag aac aac gga ggc gcg ggg tgc gtg tgc cac ctg ctc          960
Cys Ile Pro Glu Asn Asn Gly Gly Ala Gly Cys Val Cys His Leu Leu
305                 310                 315                 320

atg gat gac gtg gtc agt gcg gat aac tat aca ctg gac ctg tgg gct        1008
Met Asp Asp Val Val Ser Ala Asp Asn Tyr Thr Leu Asp Leu Trp Ala
                325                 330                 335

ggg cag cag ctg ctg tgg aag ggc tcc ttc aag ccc agc gag cat gtg        1056
Gly Gln Gln Leu Leu Trp Lys Gly Ser Phe Lys Pro Ser Glu His Val
            340                 345                 350

aaa ccc agg gcc cca gga aac ctg aca gtt cac acc aat gtc tcc gac        1104
Lys Pro Arg Ala Pro Gly Asn Leu Thr Val His Thr Asn Val Ser Asp
        355                 360                 365

act ctg ctg ctg acc tgg agc aac ccg tat ccc cct gac aat tac ctg        1152
Thr Leu Leu Leu Thr Trp Ser Asn Pro Tyr Pro Pro Asp Asn Tyr Leu
        370                 375                 380

tat aat cat ctc acc tat gca gtc aac att tgg agt gaa aac gac ccg        1200
Tyr Asn His Leu Thr Tyr Ala Val Asn Ile Trp Ser Glu Asn Asp Pro
385                 390                 395                 400

gca gat ttc aga atc tat aac gtg acc tac cta gaa ccc tcc ctc cgc        1248
Ala Asp Phe Arg Ile Tyr Asn Val Thr Tyr Leu Glu Pro Ser Leu Arg
                405                 410                 415

atc gca gcc agc acc ctg aag tct ggg att tcc tac agg gca cgg gtg        1296
Ile Ala Ala Ser Thr Leu Lys Ser Gly Ile Ser Tyr Arg Ala Arg Val
            420                 425                 430

agg gcc tgg gct cag agc tat aac acc acc tgg agt gag tgg agc ccc        1344
Arg Ala Trp Ala Gln Ser Tyr Asn Thr Thr Trp Ser Glu Trp Ser Pro
            435                 440                 445

agc acc aag tgg cac aac tcc tac agg gag ccc ttc gag cag tcc gga        1392
Ser Thr Lys Trp His Asn Ser Tyr Arg Glu Pro Phe Glu Gln Ser Gly
        450                 455                 460

gac aaa act cac aca tgc cca ccg tgc cca gca cct gaa ctc ctg ggg        1440
Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly
465                 470                 475                 480

gga ccg tca gtc ttc ctc ttc ccc cca aaa ccc aag gac acc ctc atg        1488
Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met
                485                 490                 495

atc tcc cgg acc cct gag gtc aca tgc gtg gtg gtg gac gtg agc cac        1536
Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His
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18

```
Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His
            500                 505                 510

gaa gac cct gag gtc aag ttc aac tgg tac gtg gac ggc gtg gag gtg   1584
Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val
            515                 520                 525

cat aat gcc aag aca aag ccg cgg gag gag cag tac aac agc acg tac   1632
His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr
            530                 535                 540

cgt gtg gtc agc gtc ctc acc gtc ctg cac cag gac tgg ctg aat ggc   1680
Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly
545                 550                 555                 560

aag gag tac aag tgc aag gtc tcc aac aaa gcc ctc cca gcc ccc atc   1728
Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile
                565                 570                 575

gag aaa acc atc tcc aaa gcc aaa ggg cag ccc cga gaa cca cag gtg   1776
Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val
                580                 585                 590

tac acc ctg ccc cca tcc cgg gat gag ctg acc aag aac cag gtc agc   1824
Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser
            595                 600                 605

ctg acc tgc ctg gtc aaa ggc ttc tat ccc agc gac atc gcc gtg gag   1872
Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu
            610                 615                 620

tgg gag agc aat ggg cag ccg gag aac aac tac aag acc acg cct ccc   1920
Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro
625                 630                 635                 640

gtg ctg gac tcc gac ggc tcc ttc ttc ctc tat agc aag ctc acc gtg   1968
Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val
                645                 650                 655

gac aag agc agg tgg cag cag ggg aac gtc ttc tca tgc tcc gtg atg   2016
Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met
                660                 665                 670

cat gag gct ctg cac aac cac tac acg cag aag agc ctc tcc ctg tct   2064
His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser
            675                 680                 685

ccg ggt aaa tga                                                    2076
Pro Gly Lys
    690
```

```
Met Val Lys Pro Ser Leu Pro Phe Thr Ser Leu Leu Phe Leu Gln Leu
1               5                   10                  15
Pro Leu Leu Gly Val Gly Leu Asn Thr Thr Ile Leu Thr Pro Asn Gly
```

```
                    20                      25                      30
Asn Glu Asp Thr Thr Ala Asp Phe Phe Leu Thr Thr Met Pro Thr Asp
            35                      40                      45
Ser Leu Ser Val Ser Thr Leu Pro Leu Pro Glu Val Gln Cys Phe Val
        50                      55                      60
Phe Asn Val Glu Tyr Met Asn Cys Thr Trp Asn Ser Ser Ser Glu Pro
65                      70                      75                      80
Gln Pro Thr Asn Leu Thr Leu His Tyr Trp Tyr Lys Asn Ser Asp Asn
                85                      90                      95
Asp Lys Val Gln Lys Cys Ser His Tyr Leu Phe Ser Glu Glu Ile Thr
            100                     105                     110
Ser Gly Cys Gln Leu Gln Lys Lys Glu Ile His Leu Tyr Gln Thr Phe
            115                     120                     125
Val Val Gln Leu Gln Asp Pro Arg Glu Pro Arg Arg Gln Ala Thr Gln
        130                     135                     140
Met Leu Lys Leu Gln Asn Leu Val Ile Pro Trp Ala Pro Glu Asn Leu
145                     150                     155                     160
Thr Leu His Lys Leu Ser Glu Ser Gln Leu Glu Leu Asn Trp Asn Asn
                165                     170                     175
Arg Phe Leu Asn His Cys Leu Glu His Leu Val Gln Tyr Arg Thr Asp
            180                     185                     190
Trp Asp His Ser Trp Thr Glu Gln Ser Val Asp Tyr Arg His Lys Phe
            195                     200                     205
Ser Leu Pro Ser Val Asp Gly Gln Lys Arg Tyr Thr Phe Arg Val Arg
        210                     215                     220
Ser Arg Phe Asn Pro Leu Cys Gly Ser Ala Gln His Trp Ser Glu Trp
225                     230                     235                     240
Ser His Pro Ile His Trp Gly Ser Asn Thr Ser Lys Glu Asn Gly Asn
                245                     250                     255
Met Lys Val Leu Gln Glu Pro Thr Cys Val Ser Asp Tyr Met Ser Ile
            260                     265                     270
Ser Thr Cys Glu Trp Lys Met Asn Gly Pro Thr Asn Cys Ser Thr Glu
            275                     280                     285
Leu Arg Leu Leu Tyr Gln Leu Val Phe Leu Leu Ser Glu Ala His Thr
        290                     295                     300
Cys Ile Pro Glu Asn Asn Gly Gly Ala Gly Cys Val Cys His Leu Leu
305                     310                     315                     320
Met Asp Asp Val Val Ser Ala Asp Asn Tyr Thr Leu Asp Leu Trp Ala
            325                     330                     335
Gly Gln Gln Leu Leu Trp Lys Gly Ser Phe Lys Pro Ser Glu His Val
        340                     345                     350
Lys Pro Arg Ala Pro Gly Asn Leu Thr Val His Thr Asn Val Ser Asp
        355                     360                     365
Thr Leu Leu Leu Thr Trp Ser Asn Pro Tyr Pro Pro Asp Asn Tyr Leu
        370                     375                     380
Tyr Asn His Leu Thr Tyr Ala Val Asn Ile Trp Ser Glu Asn Asp Pro
385                     390                     395                     400
Ala Asp Phe Arg Ile Tyr Asn Val Thr Tyr Leu Glu Pro Ser Leu Arg
            405                     410                     415
Ile Ala Ala Ser Thr Leu Lys Ser Gly Ile Ser Tyr Arg Ala Arg Val
            420                     425                     430
Arg Ala Trp Ala Gln Ser Tyr Asn Thr Thr Trp Ser Glu Trp Ser Pro
        435                     440                     445
Ser Thr Lys Trp His Asn Ser Tyr Arg Glu Pro Phe Glu Gln Ser Gly
    450                     455                     460
Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly
465                     470                     475                     480
Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met
                485                     490                     495
Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His
        500                     505                     510
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20

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Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val
        515                 520                 525
His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr
        530                 535                 540
Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly
545                 550                 555                 560
Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile
                565                 570                 575
Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val
                580                 585                 590
Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser
                595                 600                 605
Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu
        610                 615                 620
Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro
625                 630                 635                 640
Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val
                645                 650                 655
Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met
                660                 665                 670
His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser
        675                 680                 685
Pro Gly Lys
        690


        <210> 21
        <211> 2085
        <212> DNA
        <213> Homo sapiens

        <220>
        <221> CDS
        <222> (1)...(2082)

        <400> 21
atg gtg aag cca tca tta cca ttc aca tcc ctc tta ttc ctg cag ctg      48
Met Val Lys Pro Ser Leu Pro Phe Thr Ser Leu Leu Phe Leu Gln Leu
1               5                   10                  15

ccc ctg ctg gga gtg ggg ctg aac acg aca att ctg acg ccc aat ggg      96
Pro Leu Leu Gly Val Gly Leu Asn Thr Thr Ile Leu Thr Pro Asn Gly
                20                  25                  30

aat gaa gac acc aca gct gat ttc ttc ctg acc act atg ccc act gac     144
Asn Glu Asp Thr Thr Ala Asp Phe Phe Leu Thr Thr Met Pro Thr Asp
            35                  40                  45

tcc ctc agt gtt tcc act ctg ccc ctc cca gag gtt cag tgt ttt gtg     192
Ser Leu Ser Val Ser Thr Leu Pro Leu Pro Glu Val Gln Cys Phe Val
        50                  55                  60

ttc aat gtc gag tac atg aat tgc act tgg aac agc agc tct gag ccc     240
Phe Asn Val Glu Tyr Met Asn Cys Thr Trp Asn Ser Ser Ser Glu Pro
65                  70                  75                  80

cag cct acc aac ctc act ctg cat tat tgg tac aag aac tcg gat aat     288
Gln Pro Thr Asn Leu Thr Leu His Tyr Trp Tyr Lys Asn Ser Asp Asn
                85                  90                  95

gat aaa gtc cag aag tgc agc cac tat cta ttc tct gaa gaa atc act     336
Asp Lys Val Gln Lys Cys Ser His Tyr Leu Phe Ser Glu Glu Ile Thr
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21

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tct ggc tgt cag ttg caa aaa aag gag atc cac ctc tac caa aca ttt        384
Ser Gly Cys Gln Leu Gln Lys Lys Glu Ile His Leu Tyr Gln Thr Phe
        115             120             125

gtt gtt cag ctc cag gac cca cgg gaa ccc agg aga cag gcc aca cag        432
Val Val Gln Leu Gln Asp Pro Arg Glu Pro Arg Arg Gln Ala Thr Gln
130             135             140

atg cta aaa ctg cag aat ctg gtg atc ccc tgg gct cca gag aac cta        480
Met Leu Lys Leu Gln Asn Leu Val Ile Pro Trp Ala Pro Glu Asn Leu
145             150             155             160

aca ctt cac aaa ctg agt gaa tcc cag cta gaa ctg aac tgg aac aac        528
Thr Leu His Lys Leu Ser Glu Ser Gln Leu Glu Leu Asn Trp Asn Asn
            165             170             175

aga ttc ttg aac cac tgt ttg gag cac ttg gtg cag tac cgg act gac        576
Arg Phe Leu Asn His Cys Leu Glu His Leu Val Gln Tyr Arg Thr Asp
            180             185             190

tgg gac cac agc tgg act gaa caa tca gtg gat tat aga cat aag ttc        624
Trp Asp His Ser Trp Thr Glu Gln Ser Val Asp Tyr Arg His Lys Phe
            195             200             205

tcc ttg cct agt gtg gat ggg cag aaa cgc tac acg ttt cgt gtt cgg        672
Ser Leu Pro Ser Val Asp Gly Gln Lys Arg Tyr Thr Phe Arg Val Arg
        210             215             220

agc cgc ttt aac cca ctc tgt gga agt gct cag cat tgg agt gaa tgg        720
Ser Arg Phe Asn Pro Leu Cys Gly Ser Ala Gln His Trp Ser Glu Trp
225             230             235             240

agc cac cca atc cac tgg ggg agc aat act tca aaa gag aac gcg tcg        768
Ser His Pro Ile His Trp Gly Ser Asn Thr Ser Lys Glu Asn Ala Ser
            245             250             255

tct ggg aac atg aag gtc ctg cag gag ccc acc tgc gtc tcc gac tac        816
Ser Gly Asn Met Lys Val Leu Gln Glu Pro Thr Cys Val Ser Asp Tyr
        260             265             270

atg agc atc tct act tgc gag tgg aag atg aat ggt ccc acc aat tgc        864
Met Ser Ile Ser Thr Cys Glu Trp Lys Met Asn Gly Pro Thr Asn Cys
        275             280             285

agc acc gag ctc cgc ctg ttg tac cag ctg gtt ttt ctg ctc tcc gaa        912
Ser Thr Glu Leu Arg Leu Leu Tyr Gln Leu Val Phe Leu Leu Ser Glu
        290             295             300

gcc cac acg tgt atc cct gag aac aac gga ggc gcg ggg tgc gtg tgc        960
Ala His Thr Cys Ile Pro Glu Asn Asn Gly Gly Ala Gly Cys Val Cys
305             310             315             320

cac ctg ctc atg gat gac gtg gtc agt gcg gat aac tat aca ctg gac        1008
His Leu Leu Met Asp Asp Val Val Ser Ala Asp Asn Tyr Thr Leu Asp
            325             330             335

ctg tgg gct ggg cag cag ctg ctg tgg aag ggc tcc ttc aag ccc agc        1056
Leu Trp Ala Gly Gln Gln Leu Leu Trp Lys Gly Ser Phe Lys Pro Ser
        340             345             350
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gag cat gtg aaa ccc agg gcc cca gga aac ctg aca gtt cac acc aat       1104
Glu His Val Lys Pro Arg Ala Pro Gly Asn Leu Thr Val His Thr Asn
        355             360             365

gtc tcc gac act ctg ctg ctg acc tgg agc aac ccg tat ccc cct gac       1152
Val Ser Asp Thr Leu Leu Leu Thr Trp Ser Asn Pro Tyr Pro Pro Asp
        370             375             380

aat tac ctg tat aat cat ctc acc tat gca gtc aac att tgg agt gaa       1200
Asn Tyr Leu Tyr Asn His Leu Thr Tyr Ala Val Asn Ile Trp Ser Glu
385             390             395             400

aac gac ccg gca gat ttc aga atc tat aac gtg acc tac cta gaa ccc       1248
Asn Asp Pro Ala Asp Phe Arg Ile Tyr Asn Val Thr Tyr Leu Glu Pro
                405             410             415

tcc ctc cgc atc gca gcc agc acc ctg aag tct ggg att tcc tac agg       1296
Ser Leu Arg Ile Ala Ala Ser Thr Leu Lys Ser Gly Ile Ser Tyr Arg
            420             425             430

gca cgg gtg agg gcc tgg gct cag agc tat aac acc acc tgg agt gag       1344
Ala Arg Val Arg Ala Trp Ala Gln Ser Tyr Asn Thr Thr Trp Ser Glu
            435             440             445

tgg agc ccc agc acc aag tgg cac aac tcc tac agg gag ccc ttc gag       1392
Trp Ser Pro Ser Thr Lys Trp His Asn Ser Tyr Arg Glu Pro Phe Glu
        450             455             460

cag tcc gga gac aaa act cac aca tgc cca ccg tgc cca gca cct gaa       1440
Gln Ser Gly Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu
465             470             475             480

ctc ctg ggg gga ccg tca gtc ttc ctc ttc ccc cca aaa ccc aag gac       1488
Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp
                485             490             495

acc ctc atg atc tcc cgg acc cct gag gtc aca tgc gtg gtg gtg gac       1536
Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp
            500             505             510

gtg agc cac gaa gac cct gag gtc aag ttc aac tgg tac gtg gac ggc       1584
Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly
            515             520             525

gtg gag gtg cat aat gcc aag aca aag ccg cgg gag gag cag tac aac       1632
Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn
        530             535             540

agc acg tac cgt gtg gtc agc gtc ctc acc gtc ctg cac cag gac tgg       1680
Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp
545             550             555             560

ctg aat ggc aag gag tac aag tgc aag gtc tcc aac aaa gcc ctc cca       1728
Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro
                565             570             575

gcc ccc atc gag aaa acc atc tcc aaa gcc aaa ggg cag ccc cga gaa       1776
Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu
                580             585             590
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cca cag gtg tac acc ctg ccc cca tcc cgg gat gag ctg acc aag aac      1824
Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn
        595                 600                 605

cag gtc agc ctg acc tgc ctg gtc aaa ggc ttc tat ccc agc gac atc      1872
Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile
        610                 615                 620

gcc gtg gag tgg gag agc aat ggg cag ccg gag aac aac tac aag acc      1920
Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr
625                 630                 635                 640

acg cct ccc gtg ctg gac tcc gac ggc tcc ttc ttc ctc tat agc aag      1968
Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys
                645                 650                 655

ctc acc gtg gac aag agc agg tgg cag cag ggg aac gtc ttc tca tgc      2016
Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys
                660                 665                 670

tcc gtg atg cat gag gct ctg cac aac cac tac acg cag aag agc ctc      2064
Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu
        675                 680                 685

tcc ctg tct ccg ggt aaa tga                                          2085
Ser Leu Ser Pro Gly Lys
        690


        <210> 22
        <211> 694
        <212> PRT
        <213> Homo sapiens

        <400> 22
Met Val Lys Pro Ser Leu Pro Phe Thr Ser Leu Leu Phe Leu Gln Leu
1                 5                   10                  15
Pro Leu Leu Gly Val Gly Leu Asn Thr Thr Ile Leu Thr Pro Asn Gly
        20                  25                  30
Asn Glu Asp Thr Thr Ala Asp Phe Phe Leu Thr Thr Met Pro Thr Asp
        35                  40                  45
Ser Leu Ser Val Ser Thr Leu Pro Leu Pro Glu Val Gln Cys Phe Val
        50                  55                  60
Phe Asn Val Glu Tyr Met Asn Cys Thr Trp Asn Ser Ser Ser Glu Pro
65                  70                  75                  80
Gln Pro Thr Asn Leu Thr Leu His Tyr Trp Tyr Lys Asn Ser Asp Asn
                85                  90                  95
Asp Lys Val Gln Lys Cys Ser His Tyr Leu Phe Ser Glu Glu Ile Thr
        100                 105                 110
Ser Gly Cys Gln Leu Gln Lys Lys Glu Ile His Leu Tyr Gln Thr Phe
        115                 120                 125
Val Val Gln Leu Gln Asp Pro Arg Glu Pro Arg Arg Gln Ala Thr Gln
        130                 135                 140
Met Leu Lys Leu Gln Asn Leu Val Ile Pro Trp Ala Pro Glu Asn Leu
145                 150                 155                 160
Thr Leu His Lys Leu Ser Glu Ser Gln Leu Glu Leu Asn Trp Asn Asn
                165                 170                 175
Arg Phe Leu Asn His Cys Leu Glu His Leu Val Gln Tyr Arg Thr Asp
        180                 185                 190
Trp Asp His Ser Trp Thr Glu Gln Ser Val Asp Tyr Arg His Lys Phe
        195                 200                 205
```

24

Ser Leu Pro Ser Val Asp Gly Gln Lys Arg Tyr Thr Phe Arg Val Arg
210   215   220
Ser Arg Phe Asn Pro Leu Cys Gly Ser Ala Gln His Trp Ser Glu Trp
225   230   235   240
Ser His Pro Ile His Trp Gly Ser Asn Thr Ser Lys Glu Asn Ala Ser
                245   250   255
Ser Gly Asn Met Lys Val Leu Gln Glu Pro Thr Cys Val Ser Asp Tyr
                260   265   270
Met Ser Ile Ser Thr Cys Glu Trp Lys Met Asn Gly Pro Thr Asn Cys
        275   280   285
Ser Thr Glu Leu Arg Leu Leu Tyr Gln Leu Val Phe Leu Leu Ser Glu
        290   295   300
Ala His Thr Cys Ile Pro Glu Asn Asn Gly Gly Ala Gly Cys Val Cys
305   310   315   320
His Leu Leu Met Asp Asp Val Val Ser Ala Asp Asn Tyr Thr Leu Asp
                325   330   335
Leu Trp Ala Gly Gln Gln Leu Leu Trp Lys Gly Ser Phe Lys Pro Ser
                340   345   350
Glu His Val Lys Pro Arg Ala Pro Gly Asn Leu Thr Val His Thr Asn
        355   360   365
Val Ser Asp Thr Leu Leu Leu Thr Trp Ser Asn Pro Tyr Pro Pro Asp
        370   375   380
Asn Tyr Leu Tyr Asn His Leu Thr Tyr Ala Val Asn Ile Trp Ser Glu
385   390   395   400
Asn Asp Pro Ala Asp Phe Arg Ile Tyr Asn Val Thr Tyr Leu Glu Pro
                405   410   415
Ser Leu Arg Ile Ala Ala Ser Thr Leu Lys Ser Gly Ile Ser Tyr Arg
                420   425   430
Ala Arg Val Arg Ala Trp Ala Gln Ser Tyr Asn Thr Thr Trp Ser Glu
        435   440   445
Trp Ser Pro Ser Thr Lys Trp His Asn Ser Tyr Arg Glu Pro Phe Glu
        450   455   460
Gln Ser Gly Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu
465   470   475   480
Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp
                485   490   495
Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp
                500   505   510
Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly
        515   520   525
Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn
        530   535   540
Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp
545   550   555   560
Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro
                565   570   575
Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu
                580   585   590
Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn
                595   600   605
Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile
        610   615   620
Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr
625   630   635   640
Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys
                645   650   655
Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys
                660   665   670
Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu
        675   680   685
Ser Leu Ser Pro Gly Lys

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<210> 23
<211> 3507
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)...(3504)

<400> 23
atg gtg gcc gtc ggc tgc gcg ctg ctg gct gcc ctg ctg gcc gcg ccg      48
Met Val Ala Val Gly Cys Ala Leu Leu Ala Ala Leu Leu Ala Ala Pro
1               5                   10                  15

gga gcg gcg ctg gcc cca agg cgc tgc cct gcg cag gag gtg gca aga      96
Gly Ala Ala Leu Ala Pro Arg Arg Cys Pro Ala Gln Glu Val Ala Arg
            20                  25                  30

ggc gtg ctg acc agt ctg cca gga gac agc gtg act ctg acc tgc ccg     144
Gly Val Leu Thr Ser Leu Pro Gly Asp Ser Val Thr Leu Thr Cys Pro
        35                  40                  45

ggg gta gag ccg gaa gac aat gcc act gtt cac tgg gtg ctc agg aag     192
Gly Val Glu Pro Glu Asp Asn Ala Thr Val His Trp Val Leu Arg Lys
    50                  55                  60

ccg gct gca ggc tcc cac ccc agc aga tgg gct ggc atg gga agg agg     240
Pro Ala Ala Gly Ser His Pro Ser Arg Trp Ala Gly Met Gly Arg Arg
65                  70                  75                  80

ctg ctg ctg agg tcg gtg cag ctc cac gac tct gga aac tat tca tgc     288
Leu Leu Leu Arg Ser Val Gln Leu His Asp Ser Gly Asn Tyr Ser Cys
                85                  90                  95

tac cgg gcc ggc cgc cca gct ggg act gtg cac ttg ctg gtg gat gtt     336
Tyr Arg Ala Gly Arg Pro Ala Gly Thr Val His Leu Leu Val Asp Val
            100                 105                 110

ccc ccc gag gag ccc cag ctc tcc tgc ttc cgg aag agc ccc ctc agc     384
Pro Pro Glu Glu Pro Gln Leu Ser Cys Phe Arg Lys Ser Pro Leu Ser
            115                 120                 125

aat gtt gtt tgt gag tgg ggt cct cgg agc acc cca tcc ctg acg aca     432
Asn Val Val Cys Glu Trp Gly Pro Arg Ser Thr Pro Ser Leu Thr Thr
        130                 135                 140

aag gct gtg ctc ttg gtg agg aag ttt cag aac agt ccg gcc gaa gac     480
Lys Ala Val Leu Leu Val Arg Lys Phe Gln Asn Ser Pro Ala Glu Asp
145                 150                 155                 160

ttc cag gag ccg tgc cag tat tcc cag gag tcc cag aag ttc tcc tgc     528
Phe Gln Glu Pro Cys Gln Tyr Ser Gln Glu Ser Gln Lys Phe Ser Cys
                165                 170                 175

cag tta gca gtc ccg gag gga gac agc tct ttc tac ata gtg tcc atg     576
Gln Leu Ala Val Pro Glu Gly Asp Ser Ser Phe Tyr Ile Val Ser Met
            180                 185                 190

tgc gtc gcc agt agt gtc ggg agc aag ttc agc aaa act caa acc ttt     624
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26

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Cys Val Ala Ser Ser Val Gly Ser Lys Phe Ser Lys Thr Gln Thr Phe
        195             200             205

cag ggt tgt gga atc ttg cag cct gat ccg cct gcc aac atc aca gtc      672
Gln Gly Cys Gly Ile Leu Gln Pro Asp Pro Pro Ala Asn Ile Thr Val
        210             215             220

act gcc gtg gcc aga aac ccc cgc tgg ctc agt gtc acc tgg caa gac      720
Thr Ala Val Ala Arg Asn Pro Arg Trp Leu Ser Val Thr Trp Gln Asp
225             230             235             240

ccc cac tcc tgg aac tca tct ttc tac aga cta cgg ttt gag ctc aga      768
Pro His Ser Trp Asn Ser Ser Phe Tyr Arg Leu Arg Phe Glu Leu Arg
                245             250             255

tat cgg gct gaa cgg tca aag aca ttc aca aca tgg atg gtc aag gac      816
Tyr Arg Ala Glu Arg Ser Lys Thr Phe Thr Thr Trp Met Val Lys Asp
                260             265             270

ctc cag cat cac tgt gtc atc cac gac gcc tgg agc ggc ctg agg cac      864
Leu Gln His His Cys Val Ile His Asp Ala Trp Ser Gly Leu Arg His
        275             280             285

gtg gtg cag ctt cgt gcc cag gag gag ttc ggg caa ggc gag tgg agc      912
Val Val Gln Leu Arg Ala Gln Glu Glu Phe Gly Gln Gly Glu Trp Ser
        290             295             300

gag tgg agc ccg gag gcc atg ggc acg cct tgg aca gaa tcc agg agt      960
Glu Trp Ser Pro Glu Ala Met Gly Thr Pro Trp Thr Glu Ser Arg Ser
305             310             315             320

cct cca gct gag aac gag gtg tcc acc ccc atg acc ggt ggc gcg cct     1008
Pro Pro Ala Glu Asn Glu Val Ser Thr Pro Met Thr Gly Gly Ala Pro
                325             330             335

tca ggt gct cag ctg gaa ctt cta gac cca tgt ggt tat atc agt cct     1056
Ser Gly Ala Gln Leu Glu Leu Leu Asp Pro Cys Gly Tyr Ile Ser Pro
                340             345             350

gaa tct cca gtt gta caa ctt cat tct aat ttc act gca gtt tgt gtg     1104
Glu Ser Pro Val Val Gln Leu His Ser Asn Phe Thr Ala Val Cys Val
                355             360             365

cta aag gaa aaa tgt atg gat tat ttt cat gta aat gct aat tac att     1152
Leu Lys Glu Lys Cys Met Asp Tyr Phe His Val Asn Ala Asn Tyr Ile
        370             375             380

gtc tgg aaa aca aac cat ttt act att cct aag gag caa tat act atc     1200
Val Trp Lys Thr Asn His Phe Thr Ile Pro Lys Glu Gln Tyr Thr Ile
385             390             395             400

ata aac aga aca gca tcc agt gtc acc ttt aca gat ata gct tca tta     1248
Ile Asn Arg Thr Ala Ser Ser Val Thr Phe Thr Asp Ile Ala Ser Leu
                405             410             415

aat att cag ctc act tgc aac att ctt aca ttc gga cag ctt gaa cag     1296
Asn Ile Gln Leu Thr Cys Asn Ile Leu Thr Phe Gly Gln Leu Glu Gln
        420             425             430

aat gtt tat gga atc aca ata att tca ggc ttg cct cca gaa aaa cct     1344
Asn Val Tyr Gly Ile Thr Ile Ile Ser Gly Leu Pro Pro Glu Lys Pro
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27

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aaa aat ttg agt tgc att gtg aac gag ggg aag aaa atg agg tgt gag      1392
Lys Asn Leu Ser Cys Ile Val Asn Glu Gly Lys Lys Met Arg Cys Glu
        450             455             460

tgg gat ggt gga agg gaa aca cac ttg gag aca aac ttc act tta aaa      1440
Trp Asp Gly Gly Arg Glu Thr His Leu Glu Thr Asn Phe Thr Leu Lys
465             470             475             480

tct gaa tgg gca aca cac aag ttt gct gat tgc aaa gca aaa cgt gac      1488
Ser Glu Trp Ala Thr His Lys Phe Ala Asp Cys Lys Ala Lys Arg Asp
                485             490             495

acc ccc acc tca tgc act gtt gat tat tct act gtg tat ttt gtc aac      1536
Thr Pro Thr Ser Cys Thr Val Asp Tyr Ser Thr Val Tyr Phe Val Asn
                500             505             510

att gaa gtc tgg gta gaa gca gag aat gcc ctt ggg aag gtt aca tca      1584
Ile Glu Val Trp Val Glu Ala Glu Asn Ala Leu Gly Lys Val Thr Ser
                515             520             525

gat cat atc aat ttt gat cct gta tat aaa gtg aag ccc aat ccg cca      1632
Asp His Ile Asn Phe Asp Pro Val Tyr Lys Val Lys Pro Asn Pro Pro
        530             535             540

cat aat tta tca gtg atc aac tca gag gaa ctg tct agt atc tta aaa      1680
His Asn Leu Ser Val Ile Asn Ser Glu Glu Leu Ser Ser Ile Leu Lys
545             550             555             560

ttg aca tgg acc aac cca agt att aag agt gtt ata ata cta aaa tat      1728
Leu Thr Trp Thr Asn Pro Ser Ile Lys Ser Val Ile Ile Leu Lys Tyr
                565             570             575

aac att caa tat agg acc aaa gat gcc tca act tgg agc cag att cct      1776
Asn Ile Gln Tyr Arg Thr Lys Asp Ala Ser Thr Trp Ser Gln Ile Pro
                580             585             590

cct gaa gac aca gca tcc acc cga tct tca ttc act gtc caa gac ctt      1824
Pro Glu Asp Thr Ala Ser Thr Arg Ser Ser Phe Thr Val Gln Asp Leu
        595             600             605

aaa cct ttt aca gaa tat gtg ttt agg att cgc tgt atg aag gaa gat      1872
Lys Pro Phe Thr Glu Tyr Val Phe Arg Ile Arg Cys Met Lys Glu Asp
        610             615             620

ggt aag gga tac tgg agt gac tgg agt gaa gaa gca agt ggg atc acc      1920
Gly Lys Gly Tyr Trp Ser Asp Trp Ser Glu Glu Ala Ser Gly Ile Thr
625             630             635             640

tat gaa gat aga cca tct aaa gca cca agt ttc tgg tat aaa ata gat      1968
Tyr Glu Asp Arg Pro Ser Lys Ala Pro Ser Phe Trp Tyr Lys Ile Asp
                645             650             655

cca tcc cat act caa ggc tac aga act gta caa ctc gtg tgg aag aca      2016
Pro Ser His Thr Gln Gly Tyr Arg Thr Val Gln Leu Val Trp Lys Thr
                660             665             670

ttg cct cct ttt gaa gcc aat gga aaa atc ttg gat tat gaa gtg act      2064
Leu Pro Pro Phe Glu Ala Asn Gly Lys Ile Leu Asp Tyr Glu Val Thr
        675             680             685
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ctc aca aga tgg aaa tca cat tta caa aat tac aca gtt aat gcc aca      2112
Leu Thr Arg Trp Lys Ser His Leu Gln Asn Tyr Thr Val Asn Ala Thr
    690                 695                 700

aaa ctg aca gta aat ctc aca aat gat cgc tat cta gca acc cta aca      2160
Lys Leu Thr Val Asn Leu Thr Asn Asp Arg Tyr Leu Ala Thr Leu Thr
705                 710                 715                 720

gta aga aat ctt gtt ggc aaa tca gat gca gct gtt tta act atc cct      2208
Val Arg Asn Leu Val Gly Lys Ser Asp Ala Ala Val Leu Thr Ile Pro
                725                 730                 735

gcc tgt gac ttt caa gct act cac cct gta atg gat ctt aaa gca ttc      2256
Ala Cys Asp Phe Gln Ala Thr His Pro Val Met Asp Leu Lys Ala Phe
            740                 745                 750

ccc aaa gat aac atg ctt tgg gtg gaa tgg act act cca agg gaa tct      2304
Pro Lys Asp Asn Met Leu Trp Val Glu Trp Thr Thr Pro Arg Glu Ser
            755                 760                 765

gta aag aaa tat ata ctt gag tgg tgt gtg tta tca gat aaa gca ccc      2352
Val Lys Lys Tyr Ile Leu Glu Trp Cys Val Leu Ser Asp Lys Ala Pro
    770                 775                 780

tgt atc aca gac tgg caa caa gaa gat ggt acc gtg cat cgc acc tat      2400
Cys Ile Thr Asp Trp Gln Gln Glu Asp Gly Thr Val His Arg Thr Tyr
785                 790                 795                 800

tta aga ggg aac tta gca gag agc aaa tgc tat ttg ata aca gtt act      2448
Leu Arg Gly Asn Leu Ala Glu Ser Lys Cys Tyr Leu Ile Thr Val Thr
                805                 810                 815

cca gta tat gct gat gga cca gga agc cct gaa tcc ata aag gca tac      2496
Pro Val Tyr Ala Asp Gly Pro Gly Ser Pro Glu Ser Ile Lys Ala Tyr
            820                 825                 830

ctt aaa caa gct cca cct tcc aaa gga cct act gtt cgg aca aaa aaa      2544
Leu Lys Gln Ala Pro Pro Ser Lys Gly Pro Thr Val Arg Thr Lys Lys
            835                 840                 845

gta ggg aaa aac gaa gct gtc tta gag tgg gac caa ctt cct gtt gat      2592
Val Gly Lys Asn Glu Ala Val Leu Glu Trp Asp Gln Leu Pro Val Asp
    850                 855                 860

gtt cag aat gga ttt atc aga aat tat act ata ttt tat aga acc atc      2640
Val Gln Asn Gly Phe Ile Arg Asn Tyr Thr Ile Phe Tyr Arg Thr Ile
865                 870                 875                 880

att gga aat gaa act gct gtg aat gtg gat tct tcc cac aca gaa tat      2688
Ile Gly Asn Glu Thr Ala Val Asn Val Asp Ser Ser His Thr Glu Tyr
                885                 890                 895

aca ttg tcc tct ttg act agt gac aca ttg tac atg gta cga atg gca      2736
Thr Leu Ser Ser Leu Thr Ser Asp Thr Leu Tyr Met Val Arg Met Ala
            900                 905                 910

gca tac aca gat gaa ggt ggg aag gat ggt cca gaa ttc act ttt act      2784
Ala Tyr Thr Asp Glu Gly Gly Lys Asp Gly Pro Glu Phe Thr Phe Thr
            915                 920                 925
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acc cca aag ttt gct caa gga gaa att gaa tcc ggg ggc gac aaa act    2832
Thr Pro Lys Phe Ala Gln Gly Glu Ile Glu Ser Gly Gly Asp Lys Thr
    930                 935                 940

cac aca tgc cca ccg tgc cca gca cct gaa ctc ctg ggg gga ccg tca    2880
His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser
945                 950                 955                 960

gtc ttc ctc ttc ccc cca aaa ccc aag gac acc ctc atg atc tcc cgg    2928
Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg
                965                 970                 975

acc cct gag gtc aca tgc gtg gtg gtg gac gtg agc cac gaa gac cct    2976
Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro
                980                 985                 990

gag gtc aag ttc aac tgg tac gtg gac ggc gtg gag gtg cat aat gcc    3024
Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala
            995                 1000                1005

aag aca aag ccg cgg gag gag cag tac aac agc acg tac cgt gtg gtc    3072
Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val
    1010                1015                1020

agc gtc ctc acc gtc ctg cac cag gac tgg ctg aat ggc aag gag tac    3120
Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr
1025                1030                1035                1040

aag tgc aag gtc tcc aac aaa gcc ctc cca gcc ccc atc gag aaa acc    3168
Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr
                1045                1050                1055

atc tcc aaa gcc aaa ggg cag ccc cga gaa cca cag gtg tac acc ctg    3216
Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu
                1060                1065                1070

ccc cca tcc cgg gat gag ctg acc aag aac cag gtc agc ctg acc tgc    3264
Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr Cys
            1075                1080                1085

ctg gtc aaa ggc ttc tat ccc agc gac atc gcc gtg gag tgg gag agc    3312
Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser
    1090                1095                1100

aat ggg cag ccg gag aac aac tac aag acc acg cct ccc gtg ctg gac    3360
Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp
1105                1110                1115                1120

tcc gac ggc tcc ttc ttc ctc tac agc aag ctc acc gtg gac aag agc    3408
Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser
                1125                1130                1135

agg tgg cag cag ggg aac gtc ttc tca tgc tcc gtg atg cat gag gct    3456
Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala
                1140                1145                1150

ctg cac aac cac tac acg cag aag agc ctc tcc ctg tct ccg ggt aaa    3504
Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
                1155                1160                1165

tga                                                                 3507
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30

<210> 24
<211> 1168
<212> PRT
<213> Homo sapiens

<400> 24

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Gly Ala Ala Leu Ala Pro Arg Arg Cys Pro Ala Gln Glu Val Ala Arg
            20                  25                  30
Gly Val Leu Thr Ser Leu Pro Gly Asp Ser Val Thr Leu Thr Cys Pro
            35                  40                  45
Gly Val Glu Pro Glu Asp Asn Ala Thr Val His Trp Val Leu Arg Lys
        50                  55                  60
Pro Ala Ala Gly Ser His Pro Ser Arg Trp Ala Gly Met Gly Arg Arg
65                  70                  75                  80
Leu Leu Leu Arg Ser Val Gln Leu His Asp Ser Gly Asn Tyr Ser Cys
                85                  90                  95
Tyr Arg Ala Gly Arg Pro Ala Gly Thr Val His Leu Leu Val Asp Val
            100                 105                 110
Pro Pro Glu Glu Pro Gln Leu Ser Cys Phe Arg Lys Ser Pro Leu Ser
        115                 120                 125
Asn Val Val Cys Glu Trp Gly Pro Arg Ser Thr Pro Ser Leu Thr Thr
    130                 135                 140
Lys Ala Val Leu Leu Val Arg Lys Phe Gln Asn Ser Pro Ala Glu Asp
145                 150                 155                 160
Phe Gln Glu Pro Cys Gln Tyr Ser Gln Glu Ser Gln Lys Phe Ser Cys
                165                 170                 175
Gln Leu Ala Val Pro Glu Gly Asp Ser Ser Phe Tyr Ile Val Ser Met
            180                 185                 190
Cys Val Ala Ser Ser Val Gly Ser Lys Phe Ser Lys Thr Gln Thr Phe
        195                 200                 205
Gln Gly Cys Gly Ile Leu Gln Pro Asp Pro Pro Ala Asn Ile Thr Val
    210                 215                 220
Thr Ala Val Ala Arg Asn Pro Arg Trp Leu Ser Val Thr Trp Gln Asp
225                 230                 235                 240
Pro His Ser Trp Asn Ser Ser Phe Tyr Arg Leu Arg Phe Glu Leu Arg
                245                 250                 255
Tyr Arg Ala Glu Arg Ser Lys Thr Phe Thr Thr Trp Met Val Lys Asp
            260                 265                 270
Leu Gln His His Cys Val Ile His Asp Ala Trp Ser Gly Leu Arg His
        275                 280                 285
Val Val Gln Leu Arg Ala Gln Glu Glu Phe Gly Gln Gly Glu Trp Ser
    290                 295                 300
Glu Trp Ser Pro Glu Ala Met Gly Thr Pro Trp Thr Glu Ser Arg Ser
305                 310                 315                 320
Pro Pro Ala Glu Asn Glu Val Ser Thr Pro Met Thr Gly Gly Ala Pro
                325                 330                 335
Ser Gly Ala Gln Leu Glu Leu Leu Asp Pro Cys Gly Tyr Ile Ser Pro
            340                 345                 350
Glu Ser Pro Val Val Gln Leu His Ser Asn Phe Thr Ala Val Cys Val
        355                 360                 365
Leu Lys Glu Lys Cys Met Asp Tyr Phe His Val Asn Ala Asn Tyr Ile
    370                 375                 380
Val Trp Lys Thr Asn His Phe Thr Ile Pro Lys Glu Gln Tyr Thr Ile
385                 390                 395                 400
Ile Asn Arg Thr Ala Ser Ser Val Thr Phe Thr Asp Ile Ala Ser Leu
                405                 410                 415
Asn Ile Gln Leu Thr Cys Asn Ile Leu Thr Phe Gly Gln Leu Glu Gln
            420                 425                 430
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31

Asn Val Tyr Gly Ile Thr Ile Ile Ser Gly Leu Pro Pro Glu Lys Pro
        435   440   445
Lys Asn Leu Ser Cys Ile Val Asn Glu Gly Lys Lys Met Arg Cys Glu
        450   455   460
Trp Asp Gly Gly Arg Glu Thr His Leu Glu Thr Asn Phe Thr Leu Lys
465   470   475   480
Ser Glu Trp Ala Thr His Lys Phe Ala Asp Cys Lys Ala Lys Arg Asp
                485   490   495
Thr Pro Thr Ser Cys Thr Val Asp Tyr Ser Thr Val Tyr Phe Val Asn
                500   505   510
Ile Glu Val Trp Val Glu Ala Glu Asn Ala Leu Gly Lys Val Thr Ser
        515   520   525
Asp His Ile Asn Phe Asp Pro Val Tyr Lys Val Lys Pro Asn Pro Pro
        530   535   540
His Asn Leu Ser Val Ile Asn Ser Glu Glu Leu Ser Ser Ile Leu Lys
545   550   555   560
Leu Thr Trp Thr Asn Pro Ser Ile Lys Ser Val Ile Ile Leu Lys Tyr
                565   570   575
Asn Ile Gln Tyr Arg Thr Lys Asp Ala Ser Thr Trp Ser Gln Ile Pro
                580   585   590
Pro Glu Asp Thr Ala Ser Thr Arg Ser Ser Phe Thr Val Gln Asp Leu
        595   600   605
Lys Pro Phe Thr Glu Tyr Val Phe Arg Ile Arg Cys Met Lys Glu Asp
        610   615   620
Gly Lys Gly Tyr Trp Ser Asp Trp Ser Glu Glu Ala Ser Gly Ile Thr
625   630   635   640
Tyr Glu Asp Arg Pro Ser Lys Ala Pro Ser Phe Trp Tyr Lys Ile Asp
                645   650   655
Pro Ser His Thr Gln Gly Tyr Arg Thr Val Gln Leu Val Trp Lys Thr
                660   665   670
Leu Pro Pro Phe Glu Ala Asn Gly Lys Ile Leu Asp Tyr Glu Val Thr
        675   680   685
Leu Thr Arg Trp Lys Ser His Leu Gln Asn Tyr Thr Val Asn Ala Thr
        690   695   700
Lys Leu Thr Val Asn Leu Thr Asn Asp Arg Tyr Leu Ala Thr Leu Thr
705   710   715   720
Val Arg Asn Leu Val Gly Lys Ser Asp Ala Ala Val Leu Thr Ile Pro
                725   730   735
Ala Cys Asp Phe Gln Ala Thr His Pro Val Met Asp Leu Lys Ala Phe
                740   745   750
Pro Lys Asp Asn Met Leu Trp Val Glu Trp Thr Thr Pro Arg Glu Ser
        755   760   765
Val Lys Lys Tyr Ile Leu Glu Trp Cys Val Leu Ser Asp Lys Ala Pro
770   775   780
Cys Ile Thr Asp Trp Gln Gln Glu Asp Gly Thr Val His Arg Thr Tyr
785   790   795   800
Leu Arg Gly Asn Leu Ala Glu Ser Lys Cys Tyr Leu Ile Thr Val Thr
                805   810   815
Pro Val Tyr Ala Asp Gly Pro Gly Ser Pro Glu Ser Ile Lys Ala Tyr
                820   825   830
Leu Lys Gln Ala Pro Pro Ser Lys Gly Pro Thr Val Arg Thr Lys Lys
        835   840   845
Val Gly Lys Asn Glu Ala Val Leu Glu Trp Asp Gln Leu Pro Val Asp
        850   855   860
Val Gln Asn Gly Phe Ile Arg Asn Tyr Thr Ile Phe Tyr Arg Thr Ile
865   870   875   880
Ile Gly Asn Glu Thr Ala Val Asn Val Asp Ser Ser His Thr Glu Tyr
                885   890   895
Thr Leu Ser Ser Leu Thr Ser Asp Thr Leu Tyr Met Val Arg Met Ala
                900   905   910
Ala Tyr Thr Asp Glu Gly Gly Lys Asp Gly Pro Glu Phe Thr Phe Thr

32

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              915                    920                    925
Thr Pro Lys Phe Ala Gln Gly Glu Ile Glu Ser Gly Gly Asp Lys Thr
          930                    935                    940
His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser
945                    950                    955                    960
Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg
                  965                    970                    975
Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro
                  980                    985                    990
Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala
                  995                   1000                   1005
Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val
     1010                   1015                   1020
Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr
1025                   1030                   1035                   1040
Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr
                  1045                   1050                   1055
Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu
                  1060                   1065                   1070
Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr Cys
                  1075                   1080                   1085
Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser
                  1090                   1095                   1100
Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp
1105                   1110                   1115                   1120
Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser
                  1125                   1130                   1135
Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala
                  1140                   1145                   1150
Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
                  1155                   1160                   1165


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          <400> 25
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Met Val Ala Val Gly Cys Ala Leu Leu Ala Ala Leu Leu Ala Ala Pro
1               5                  10                  15


gga gcg gcg ctg gcc cca agg cgc tgc cct gcg cag gag gtg gca aga        96
Gly Ala Ala Leu Ala Pro Arg Arg Cys Pro Ala Gln Glu Val Ala Arg
                20                  25                  30


ggc gtg ctg acc agt ctg cca gga gac agc gtg act ctg acc tgc ccg       144
Gly Val Leu Thr Ser Leu Pro Gly Asp Ser Val Thr Leu Thr Cys Pro
        35                  40                  45


ggg gta gag ccg gaa gac aat gcc act gtt cac tgg gtg ctc agg aag       192
Gly Val Glu Pro Glu Asp Asn Ala Thr Val His Trp Val Leu Arg Lys
    50                  55                  60


ccg gct gca ggc tcc cac ccc agc aga tgg gct ggc atg gga agg agg       240
Pro Ala Ala Gly Ser His Pro Ser Arg Trp Ala Gly Met Gly Arg Arg
65                  70                  75                  80
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33

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ctg ctg ctg agg tcg gtg cag ctc cac gac tct gga aac tat tca tgc        288
Leu Leu Leu Arg Ser Val Gln Leu His Asp Ser Gly Asn Tyr Ser Cys
                85                      90                  95

tac cgg gcc ggc cgc cca gct ggg act gtg cac ttg ctg gtg gat gtt        336
Tyr Arg Ala Gly Arg Pro Ala Gly Thr Val His Leu Leu Val Asp Val
            100                     105                 110

ccc ccc gag gag ccc cag ctc tcc tgc ttc cgg aag agc ccc ctc agc        384
Pro Pro Glu Glu Pro Gln Leu Ser Cys Phe Arg Lys Ser Pro Leu Ser
            115                     120                 125

aat gtt gtt tgt gag tgg ggt cct cgg agc acc cca tcc ctg acg aca        432
Asn Val Val Cys Glu Trp Gly Pro Arg Ser Thr Pro Ser Leu Thr Thr
    130                     135                 140

aag gct gtg ctc ttg gtg agg aag ttt cag aac agt ccg gcc gaa gac        480
Lys Ala Val Leu Leu Val Arg Lys Phe Gln Asn Ser Pro Ala Glu Asp
145                     150                 155                 160

ttc cag gag ccg tgc cag tat tcc cag gag tcc cag aag ttc tcc tgc        528
Phe Gln Glu Pro Cys Gln Tyr Ser Gln Glu Ser Gln Lys Phe Ser Cys
                165                     170                 175

cag tta gca gtc ccg gag gga gac agc tct ttc tac ata gtg tcc atg        576
Gln Leu Ala Val Pro Glu Gly Asp Ser Ser Phe Tyr Ile Val Ser Met
            180                     185                 190

tgc gtc gcc agt agt gtc ggg agc aag ttc agc aaa act caa acc ttt        624
Cys Val Ala Ser Ser Val Gly Ser Lys Phe Ser Lys Thr Gln Thr Phe
            195                     200                 205

cag ggt tgt gga atc ttg cag cct gat ccg cct gcc aac atc aca gtc        672
Gln Gly Cys Gly Ile Leu Gln Pro Asp Pro Pro Ala Asn Ile Thr Val
    210                     215                 220

act gcc gtg gcc aga aac ccc cgc tgg ctc agt gtc acc tgg caa gac        720
Thr Ala Val Ala Arg Asn Pro Arg Trp Leu Ser Val Thr Trp Gln Asp
225                     230                 235                 240

ccc cac tcc tgg aac tca tct ttc tac aga cta cgg ttt gag ctc aga        768
Pro His Ser Trp Asn Ser Ser Phe Tyr Arg Leu Arg Phe Glu Leu Arg
                245                     250                 255

tat cgg gct gaa cgg tca aag aca ttc aca aca tgg atg gtc aag gac        816
Tyr Arg Ala Glu Arg Ser Lys Thr Phe Thr Thr Trp Met Val Lys Asp
            260                     265                 270

ctc cag cat cac tgt gtc atc cac gac gcc tgg agc ggc ctg agg cac        864
Leu Gln His His Cys Val Ile His Asp Ala Trp Ser Gly Leu Arg His
            275                     280                 285

gtg gtg cag ctt cgt gcc cag gag gag ttc ggg caa ggc gag tgg agc        912
Val Val Gln Leu Arg Ala Gln Glu Glu Phe Gly Gln Gly Glu Trp Ser
    290                     295                 300

gag tgg agc ccg gag gcc atg ggc acg cct tgg aca gaa tcg cga tcg        960
Glu Trp Ser Pro Glu Ala Met Gly Thr Pro Trp Thr Glu Ser Arg Ser
305                     310                 315                 320
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34

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cct cca gct gag aac gag gtg tcc acc ccc atg gaa ctt cta gac cca        1008
Pro Pro Ala Glu Asn Glu Val Ser Thr Pro Met Glu Leu Leu Asp Pro
                325                 330                 335

tgt ggt tat atc agt cct gaa tct cca gtt gta caa ctt cat tct aat        1056
Cys Gly Tyr Ile Ser Pro Glu Ser Pro Val Val Gln Leu His Ser Asn
                340                 345                 350

ttc act gca gtt tgt gtg cta aag gaa aaa tgt atg gat tat ttt cat        1104
Phe Thr Ala Val Cys Val Leu Lys Glu Lys Cys Met Asp Tyr Phe His
                355                 360                 365

gta aat gct aat tac att gtc tgg aaa aca aac cat ttt act att cct        1152
Val Asn Ala Asn Tyr Ile Val Trp Lys Thr Asn His Phe Thr Ile Pro
        370                 375                 380

aag gag caa tat act atc ata aac aga aca gca tcc agt gtc acc ttt        1200
Lys Glu Gln Tyr Thr Ile Ile Asn Arg Thr Ala Ser Ser Val Thr Phe
385                 390                 395                 400

aca gat ata gct tca tta aat att cag ctc act tgc aac att ctt aca        1248
Thr Asp Ile Ala Ser Leu Asn Ile Gln Leu Thr Cys Asn Ile Leu Thr
                405                 410                 415

ttc gga cag ctt gaa cag aat gtt tat gga atc aca ata att tca ggc        1296
Phe Gly Gln Leu Glu Gln Asn Val Tyr Gly Ile Thr Ile Ile Ser Gly
                420                 425                 430

ttg cct cca gaa aaa cct aaa aat ttg agt tgc att gtg aac gag ggg        1344
Leu Pro Pro Glu Lys Pro Lys Asn Leu Ser Cys Ile Val Asn Glu Gly
                435                 440                 445

aag aaa atg agg tgt gag tgg gat ggt gga agg gaa aca cac ttg gag        1392
Lys Lys Met Arg Cys Glu Trp Asp Gly Gly Arg Glu Thr His Leu Glu
        450                 455                 460

aca aac ttc act tta aaa tct gaa tgg gca aca cac aag ttt gct gat        1440
Thr Asn Phe Thr Leu Lys Ser Glu Trp Ala Thr His Lys Phe Ala Asp
465                 470                 475                 480

tgc aaa gca aaa cgt gac acc ccc acc tca tgc act gtt gat tat tct        1488
Cys Lys Ala Lys Arg Asp Thr Pro Thr Ser Cys Thr Val Asp Tyr Ser
                485                 490                 495

act gtg tat ttt gtc aac att gaa gtc tgg gta gaa gca gag aat gcc        1536
Thr Val Tyr Phe Val Asn Ile Glu Val Trp Val Glu Ala Glu Asn Ala
                500                 505                 510

ctt ggg aag gtt aca tca gat cat atc aat ttt gat cct gta tat aaa        1584
Leu Gly Lys Val Thr Ser Asp His Ile Asn Phe Asp Pro Val Tyr Lys
                515                 520                 525

gtg aag ccc aat ccg cca cat aat tta tca gtg atc aac tca gag gaa        1632
Val Lys Pro Asn Pro Pro His Asn Leu Ser Val Ile Asn Ser Glu Glu
        530                 535                 540

ctg tct agt atc tta aaa ttg aca tgg acc aac cca agt att aag agt        1680
Leu Ser Ser Ile Leu Lys Leu Thr Trp Thr Asn Pro Ser Ile Lys Ser
545                 550                 555                 560

gtt ata ata cta aaa tat aac att caa tat agg acc aaa gat gcc tca        1728
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35

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Val Ile Ile Leu Lys Tyr Asn Ile Gln Tyr Arg Thr Lys Asp Ala Ser
                565                 570             575

act tgg agc cag att cct cct gaa gac aca gca tcc acc cga tct tca     1776
Thr Trp Ser Gln Ile Pro Pro Glu Asp Thr Ala Ser Thr Arg Ser Ser
                580                 585             590

ttc act gtc caa gac ctt aaa cct ttt aca gaa tat gtg ttt agg att     1824
Phe Thr Val Gln Asp Leu Lys Pro Phe Thr Glu Tyr Val Phe Arg Ile
                595                 600             605

cgc tgt atg aag gaa gat ggt aag gga tac tgg agt gac tgg agt gaa     1872
Arg Cys Met Lys Glu Asp Gly Lys Gly Tyr Trp Ser Asp Trp Ser Glu
    610                 615                 620

gaa gca agt ggg atc acc tat gaa gat aga cca tct aaa gca cca agt     1920
Glu Ala Ser Gly Ile Thr Tyr Glu Asp Arg Pro Ser Lys Ala Pro Ser
625                 630                 635                 640

ttc tgg tat aaa ata gat cca tcc cat act caa ggc tac aga act gta     1968
Phe Trp Tyr Lys Ile Asp Pro Ser His Thr Gln Gly Tyr Arg Thr Val
                645                 650                 655

caa ctc gtg tgg aag aca ttg cct cct ttt gaa gcc aat gga aaa atc     2016
Gln Leu Val Trp Lys Thr Leu Pro Pro Phe Glu Ala Asn Gly Lys Ile
                660                 665                 670

ttg gat tat gaa gtg act ctc aca aga tgg aaa tca cat tta caa aat     2064
Leu Asp Tyr Glu Val Thr Leu Thr Arg Trp Lys Ser His Leu Gln Asn
                675                 680                 685

tac aca gtt aat gcc aca aaa ctg aca gta aat ctc aca aat gat cgc     2112
Tyr Thr Val Asn Ala Thr Lys Leu Thr Val Asn Leu Thr Asn Asp Arg
    690                 695                 700

tat cta gca acc cta aca gta aga aat ctt gtt ggc aaa tca gat gca     2160
Tyr Leu Ala Thr Leu Thr Val Arg Asn Leu Val Gly Lys Ser Asp Ala
705                 710                 715                 720

gct gtt tta act atc cct gcc tgt gac ttt caa gct act cac cct gta     2208
Ala Val Leu Thr Ile Pro Ala Cys Asp Phe Gln Ala Thr His Pro Val
                725                 730                 735

atg gat ctt aaa gca ttc ccc aaa gat aac atg ctt tgg gtg gaa tgg     2256
Met Asp Leu Lys Ala Phe Pro Lys Asp Asn Met Leu Trp Val Glu Trp
                740                 745                 750

act act cca agg gaa tct gta aag aaa tat ata ctt gag tgg tgt gtg     2304
Thr Thr Pro Arg Glu Ser Val Lys Lys Tyr Ile Leu Glu Trp Cys Val
                755                 760                 765

tta tca gat aaa gca ccc tgt atc aca gac tgg caa caa gaa gat ggt     2352
Leu Ser Asp Lys Ala Pro Cys Ile Thr Asp Trp Gln Gln Glu Asp Gly
    770                 775                 780

acc gtg cat cgc acc tat tta aga ggg aac tta gca gag agc aaa tgc     2400
Thr Val His Arg Thr Tyr Leu Arg Gly Asn Leu Ala Glu Ser Lys Cys
785                 790                 795                 800

tat ttg ata aca gtt act cca gta tat gct gat gga cca gga agc cct     2448
Tyr Leu Ile Thr Val Thr Pro Val Tyr Ala Asp Gly Pro Gly Ser Pro
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36

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gaa tcc ata aag gca tac ctt aaa caa gct cca cct tcc aaa gga cct    2496
Glu Ser Ile Lys Ala Tyr Leu Lys Gln Ala Pro Pro Ser Lys Gly Pro
            820              825              830

act gtt cgg aca aaa aaa gta ggg aaa aac gaa gct gtc tta gag tgg    2544
Thr Val Arg Thr Lys Lys Val Gly Lys Asn Glu Ala Val Leu Glu Trp
            835              840              845

gac caa ctt cct gtt gat gtt cag aat gga ttt atc aga aat tat act    2592
Asp Gln Leu Pro Val Asp Val Gln Asn Gly Phe Ile Arg Asn Tyr Thr
            850              855              860

ata ttt tat aga acc atc att gga aat gaa act gct gtg aat gtg gat    2640
Ile Phe Tyr Arg Thr Ile Ile Gly Asn Glu Thr Ala Val Asn Val Asp
865              870              875              880

tct tcc cac aca gaa tat aca ttg tcc tct ttg act agt gac aca ttg    2688
Ser Ser His Thr Glu Tyr Thr Leu Ser Ser Leu Thr Ser Asp Thr Leu
            885              890              895

tac atg gta cga atg gca gca tac aca gat gaa ggt ggg aag gat ggt    2736
Tyr Met Val Arg Met Ala Ala Tyr Thr Asp Glu Gly Gly Lys Asp Gly
            900              905              910

cca gaa ttc act ttt act acc cca aag ttt gct caa gga gaa att gaa    2784
Pro Glu Phe Thr Phe Thr Thr Pro Lys Phe Ala Gln Gly Glu Ile Glu
            915              920              925

tcc ggg ggc gac aaa act cac aca tgc cca ccg tgc cca gca cct gaa    2832
Ser Gly Gly Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu
930              935              940

ctc ctg ggg gga ccg tca gtc ttc ctc ttc ccc cca aaa ccc aag gac    2880
Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp
945              950              955              960

acc ctc atg atc tcc cgg acc cct gag gtc aca tgc gtg gtg gtg gac    2928
Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp
                965              970              975

gtg agc cac gaa gac cct gag gtc aag ttc aac tgg tac gtg gac ggc    2976
Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly
            980              985              990

gtg gag gtg cat aat gcc aag aca aag ccg cgg gag gag cag tac aac    3024
Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn
            995              1000             1005

agc acg tac cgt gtg gtc agc gtc ctc acc gtc ctg cac cag gac tgg    3072
Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp
    1010             1015             1020

ctg aat ggc aag gag tac aag tgc aag gtc tcc aac aaa gcc ctc cca    3120
Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro
1025             1030             1035             1040

gcc ccc atc gag aaa acc atc tcc aaa gcc aaa ggg cag ccc cga gaa    3168
Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu
            1045             1050             1055
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cca cag gtg tac acc ctg ccc cca tcc cgg gat gag ctg acc aag aac    3216
Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn
            1060                1065                1070

cag gtc agc ctg acc tgc ctg gtc aaa ggc ttc tat ccc agc gac atc    3264
Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile
            1075                1080                1085

gcc gtg gag tgg gag agc aat ggg cag ccg gag aac aac tac aag acc    3312
Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr
            1090                1095                1100

acg cct ccc gtg ctg gac tcc gac ggc tcc ttc ttc ctc tac agc aag    3360
Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys
1105                1110                1115                1120

ctc acc gtg gac aag agc agg tgg cag cag ggg aac gtc ttc tca tgc    3408
Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys
            1125                1130                1135

tcc gtg atg cat gag gct ctg cac aac cac tac acg cag aag agc ctc    3456
Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu
            1140                1145                1150

tcc ctg tct ccg ggt aaa tga                                        3477
Ser Leu Ser Pro Gly Lys
            1155


    <210> 26
    <211> 1158
    <212> PRT
    <213> Homo sapiens

    <400> 26
Met Val Ala Val Gly Cys Ala Leu Leu Ala Ala Leu Leu Ala Ala Pro
1               5               10                  15
Gly Ala Ala Leu Ala Pro Arg Arg Cys Pro Ala Gln Glu Val Ala Arg
            20              25              30
Gly Val Leu Thr Ser Leu Pro Gly Asp Ser Val Thr Leu Thr Cys Pro
        35              40              45
Gly Val Glu Pro Glu Asp Asn Ala Thr Val His Trp Val Leu Arg Lys
        50              55              60
Pro Ala Ala Gly Ser His Pro Ser Arg Trp Ala Gly Met Gly Arg Arg
65              70              75              80
Leu Leu Leu Arg Ser Val Gln Leu His Asp Ser Gly Asn Tyr Ser Cys
            85              90              95
Tyr Arg Ala Gly Arg Pro Ala Gly Thr Val His Leu Leu Val Asp Val
            100             105             110
Pro Pro Glu Glu Pro Gln Leu Ser Cys Phe Arg Lys Ser Pro Leu Ser
        115             120             125
Asn Val Val Cys Glu Trp Gly Pro Arg Ser Thr Pro Ser Leu Thr Thr
    130             135             140
Lys Ala Val Leu Leu Val Arg Lys Phe Gln Asn Ser Pro Ala Glu Asp
145             150             155             160
Phe Gln Glu Pro Cys Gln Tyr Ser Gln Glu Ser Gln Lys Phe Ser Cys
            165             170             175
Gln Leu Ala Val Pro Glu Gly Asp Ser Ser Phe Tyr Ile Val Ser Met
            180             185             190
Cys Val Ala Ser Ser Val Gly Ser Lys Phe Ser Lys Thr Gln Thr Phe
```

38

```
           195                      200                      205
Gln Gly Cys Gly Ile Leu Gln Pro Asp Pro Pro Ala Asn Ile Thr Val
    210                      215                      220
Thr Ala Val Ala Arg Asn Pro Arg Trp Leu Ser Val Thr Trp Gln Asp
225                      230                      235                      240
Pro His Ser Trp Asn Ser Ser Phe Tyr Arg Leu Arg Phe Glu Leu Arg
                245                      250                      255
Tyr Arg Ala Glu Arg Ser Lys Thr Phe Thr Thr Trp Met Val Lys Asp
            260                      265                      270
Leu Gln His His Cys Val Ile His Asp Ala Trp Ser Gly Leu Arg His
            275                      280                      285
Val Val Gln Leu Arg Ala Gln Glu Glu Phe Gly Gln Gly Glu Trp Ser
        290                      295                      300
Glu Trp Ser Pro Glu Ala Met Gly Thr Pro Trp Thr Glu Ser Arg Ser
305                      310                      315                      320
Pro Pro Ala Glu Asn Glu Val Ser Thr Pro Met Glu Leu Leu Asp Pro
                325                      330                      335
Cys Gly Tyr Ile Ser Pro Glu Ser Pro Val Val Gln Leu His Ser Asn
            340                      345                      350
Phe Thr Ala Val Cys Val Leu Lys Glu Lys Cys Met Asp Tyr Phe His
            355                      360                      365
Val Asn Ala Asn Tyr Ile Val Trp Lys Thr Asn His Phe Thr Ile Pro
        370                      375                      380
Lys Glu Gln Tyr Thr Ile Ile Asn Arg Thr Ala Ser Ser Val Thr Phe
385                      390                      395                      400
Thr Asp Ile Ala Ser Leu Asn Ile Gln Leu Thr Cys Asn Ile Leu Thr
                405                      410                      415
Phe Gly Gln Leu Glu Gln Asn Val Tyr Gly Ile Thr Ile Ile Ser Gly
            420                      425                      430
Leu Pro Pro Glu Lys Pro Lys Asn Leu Ser Cys Ile Val Asn Glu Gly
            435                      440                      445
Lys Lys Met Arg Cys Glu Trp Asp Gly Gly Arg Glu Thr His Leu Glu
        450                      455                      460
Thr Asn Phe Thr Leu Lys Ser Glu Trp Ala Thr His Lys Phe Ala Asp
465                      470                      475                      480
Cys Lys Ala Lys Arg Asp Thr Pro Thr Ser Cys Thr Val Asp Tyr Ser
                485                      490                      495
Thr Val Tyr Phe Val Asn Ile Glu Val Trp Val Glu Ala Glu Asn Ala
            500                      505                      510
Leu Gly Lys Val Thr Ser Asp His Ile Asn Phe Asp Pro Val Tyr Lys
            515                      520        .            525
Val Lys Pro Asn Pro Pro His Asn Leu Ser Val Ile Asn Ser Glu Glu
        530                      535                      540
Leu Ser Ser Ile Leu Lys Leu Thr Trp Thr Asn Pro Ser Ile Lys Ser
545                      550                      555                      560
Val Ile Ile Leu Lys Tyr Asn Ile Gln Tyr Arg Thr Lys Asp Ala Ser
                565                      570                      575
Thr Trp Ser Gln Ile Pro Pro Glu Asp Thr Ala Ser Thr Arg Ser Ser
            580                      585                      590
Phe Thr Val Gln Asp Leu Lys Pro Phe Thr Glu Tyr Val Phe Arg Ile
        595                      600                      605
Arg Cys Met Lys Glu Asp Gly Lys Gly Tyr Trp Ser Asp Trp Ser Glu
    610                      615                      620
Glu Ala Ser Gly Ile Thr Tyr Glu Asp Arg Pro Ser Lys Ala Pro Ser
625                      630                      635                      640
Phe Trp Tyr Lys Ile Asp Pro Ser His Thr Gln Gly Tyr Arg Thr Val
                645                      650                      655
Gln Leu Val Trp Lys Thr Leu Pro Pro Phe Glu Ala Asn Gly Lys Ile
            660                      665                      670
Leu Asp Tyr Glu Val Thr Leu Thr Arg Trp Lys Ser His Leu Gln Asn
            675                      680                      685
```

39

```
Tyr Thr Val Asn Ala Thr Lys Leu Thr Val Asn Leu Thr Asn Asp Arg
    690                 695                 700
Tyr Leu Ala Thr Leu Thr Val Arg Asn Leu Val Gly Lys Ser Asp Ala
705                 710                 715                 720
Ala Val Leu Thr Ile Pro Ala Cys Asp Phe Gln Ala Thr His Pro Val
            725                 730                 735
Met Asp Leu Lys Ala Phe Pro Lys Asp Asn Met Leu Trp Val Glu Trp
            740                 745                 750
Thr Thr Pro Arg Glu Ser Val Lys Lys Tyr Ile Leu Glu Trp Cys Val
            755                 760                 765
Leu Ser Asp Lys Ala Pro Cys Ile Thr Asp Trp Gln Gln Glu Asp Gly
    770                 775                 780
Thr Val His Arg Thr Tyr Leu Arg Gly Asn Leu Ala Glu Ser Lys Cys
785                 790                 795                 800
Tyr Leu Ile Thr Val Thr Pro Val Tyr Ala Asp Gly Pro Gly Ser Pro
            805                 810                 815
Glu Ser Ile Lys Ala Tyr Leu Lys Gln Ala Pro Pro Ser Lys Gly Pro
            820                 825                 830
Thr Val Arg Thr Lys Lys Val Gly Lys Asn Glu Ala Val Leu Glu Trp
            835                 840                 845
Asp Gln Leu Pro Val Asp Val Gln Asn Gly Phe Ile Arg Asn Tyr Thr
    850                 855                 860
Ile Phe Tyr Arg Thr Ile Ile Gly Asn Glu Thr Ala Val Asn Val Asp
865                 870                 875                 880
Ser Ser His Thr Glu Tyr Thr Leu Ser Ser Leu Thr Ser Asp Thr Leu
            885                 890                 895
Tyr Met Val Arg Met Ala Ala Tyr Thr Asp Glu Gly Gly Lys Asp Gly
            900                 905                 910
Pro Glu Phe Thr Phe Thr Thr Pro Lys Phe Ala Gln Gly Glu Ile Glu
            915                 920                 925
Ser Gly Gly Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu
    930                 935                 940
Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp
945                 950                 955                 960
Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp
            965                 970                 975
Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly
            980                 985                 990
Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn
            995                 1000                1005
Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp
    1010                1015                1020
Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro
1025                1030                1035                1040
Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu
            1045                1050                1055
Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn
            1060                1065                1070
Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile
            1075                1080                1085
Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr
            1090                1095                1100
Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys
1105                1110                1115                1120
Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys
                1125                1130                1135
Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu
            1140                1145                1150
Ser Leu Ser Pro Gly Lys
            1155
```

40

<400> 27

```
atg gtg ctt ctg tgg tgt gta gtg agt ctc tac ttt tat gga atc ctg      48
Met Val Leu Leu Trp Cys Val Val Ser Leu Tyr Phe Tyr Gly Ile Leu
1               5                   10                  15

caa agt gat gcc tca gaa cgc tgc gat gac tgg gga cta gac acc atg      96
Gln Ser Asp Ala Ser Glu Arg Cys Asp Asp Trp Gly Leu Asp Thr Met
                20                  25                  30

agg caa atc caa gtg ttt gaa gat gag cca gct cgc atc aag tgc cca     144
Arg Gln Ile Gln Val Phe Glu Asp Glu Pro Ala Arg Ile Lys Cys Pro
            35                  40                  45

ctc ttt gaa cac ttc ttg aaa ttc aac tac agc aca gcc cat tca gct     192
Leu Phe Glu His Phe Leu Lys Phe Asn Tyr Ser Thr Ala His Ser Ala
        50                  55                  60

ggc ctt act ctg atc tgg tat tgg act agg cag gac cgg gac ctt gag     240
Gly Leu Thr Leu Ile Trp Tyr Trp Thr Arg Gln Asp Arg Asp Leu Glu
65                  70                  75                  80

gag cca att aac ttc cgc ctc ccc gag aac cgc att agt aag gag aaa     288
Glu Pro Ile Asn Phe Arg Leu Pro Glu Asn Arg Ile Ser Lys Glu Lys
                85                  90                  95

gat gtg ctg tgg ttc cgg ccc act ctc ctc aat gac act ggc aac tat     336
Asp Val Leu Trp Phe Arg Pro Thr Leu Leu Asn Asp Thr Gly Asn Tyr
            100                 105                 110

acc tgc atg tta agg aac act aca tat tgc agc aaa gtt gca ttt ccc     384
Thr Cys Met Leu Arg Asn Thr Thr Tyr Cys Ser Lys Val Ala Phe Pro
        115                 120                 125

ttg gaa gtt gtt caa aaa gac agc tgt ttc aat tcc ccc atg aaa ctc     432
Leu Glu Val Val Gln Lys Asp Ser Cys Phe Asn Ser Pro Met Lys Leu
    130                 135                 140

cca gtg cat aaa ctg tat ata gaa tat ggc att cag agg atc act tgt     480
Pro Val His Lys Leu Tyr Ile Glu Tyr Gly Ile Gln Arg Ile Thr Cys
145                 150                 155                 160

cca aat gta gat gga tat ttt cct tcc agt gtc aaa ccg act atc act     528
Pro Asn Val Asp Gly Tyr Phe Pro Ser Ser Val Lys Pro Thr Ile Thr
                165                 170                 175

tgg tat atg ggc tgt tat aaa ata cag aat ttt aat aat gta ata ccc     576
Trp Tyr Met Gly Cys Tyr Lys Ile Gln Asn Phe Asn Asn Val Ile Pro
            180                 185                 190

gaa ggt atg aac ttg agt ttc ctc att gcc tta att tca aat aat gga     624
Glu Gly Met Asn Leu Ser Phe Leu Ile Ala Leu Ile Ser Asn Asn Gly
        195                 200                 205
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41

```
aat tac aca tgt gtt gtt aca tat cca gaa aat gga cgt acg ttt cat          672
Asn Tyr Thr Cys Val Val Thr Tyr Pro Glu Asn Gly Arg Thr Phe His
    210             215             220

ctc acc agg act ctg act gta aag gta gta ggc tct cca aaa aat gca          720
Leu Thr Arg Thr Leu Thr Val Lys Val Val Gly Ser Pro Lys Asn Ala
225             230             235             240

gtg ccc cct gtg atc cat tca cct aat gat cat gtg gtc tat gag aaa          768
Val Pro Pro Val Ile His Ser Pro Asn Asp His Val Val Tyr Glu Lys
            245             250             255

gaa cca gga gag gag cta ctc att ccc tgt acg gtc tat ttt agt ttt          816
Glu Pro Gly Glu Glu Leu Leu Ile Pro Cys Thr Val Tyr Phe Ser Phe
            260             265             270

ctg atg gat tct cgc aat gag gtt tgg tgg acc att gat gga aaa aaa          864
Leu Met Asp Ser Arg Asn Glu Val Trp Trp Thr Ile Asp Gly Lys Lys
            275             280             285

cct gat gac atc act att gat gtc acc att aac gaa agt ata agt cat          912
Pro Asp Asp Ile Thr Ile Asp Val Thr Ile Asn Glu Ser Ile Ser His
    290             295             300

agt aga aca gaa gat gaa aca aga act cag att ttg agc atc aag aaa          960
Ser Arg Thr Glu Asp Glu Thr Arg Thr Gln Ile Leu Ser Ile Lys Lys
305             310             315             320

gtt acc tct gag gat ctc aag cgc agc tat gtc tgt cat gct aga agt        1008
Val Thr Ser Glu Asp Leu Lys Arg Ser Tyr Val Cys His Ala Arg Ser
            325             330             335

gcc aaa ggc gaa gtt gcc aaa gca gcc aag gtg aag cag aaa gtg cca        1056
Ala Lys Gly Glu Val Ala Lys Ala Ala Lys Val Lys Gln Lys Val Pro
            340             345             350

gct cca aga tac aca gtg tcc ggt ggc gcg cct atg ctg agc gag gct        1104
Ala Pro Arg Tyr Thr Val Ser Gly Gly Ala Pro Met Leu Ser Glu Ala
            355             360             365

gat aaa tgc aag gaa cgt gaa gaa aaa ata att tta gtg tca tct gca        1152
Asp Lys Cys Lys Glu Arg Glu Glu Lys Ile Ile Leu Val Ser Ser Ala
    370             375             380

aat gaa att gat gtt cgt ccc tgt cct ctt aac cca aat gaa cac aaa        1200
Asn Glu Ile Asp Val Arg Pro Cys Pro Leu Asn Pro Asn Glu His Lys
385             390             395             400

ggc act ata act tgg tat aag gat gac agc aag aca cct gta tct aca        1248
Gly Thr Ile Thr Trp Tyr Lys Asp Asp Ser Lys Thr Pro Val Ser Thr
                405             410             415

gaa caa gcc tcc agg att cat caa cac aaa gag aaa ctt tgg ttt gtt        1296
Glu Gln Ala Ser Arg Ile His Gln His Lys Glu Lys Leu Trp Phe Val
            420             425             430

cct gct aag gtg gag gat tca gga cat tac tat tgc gtg gta aga aat        1344
Pro Ala Lys Val Glu Asp Ser Gly His Tyr Tyr Cys Val Val Arg Asn
            435             440             445
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42

```
tca tct tac tgc ctc aga att aaa ata agt gca aaa ttt gtg gag aat     1392
Ser Ser Tyr Cys Leu Arg Ile Lys Ile Ser Ala Lys Phe Val Glu Asn
    450                 455                 460

gag cct aac tta tgt tat aat gca caa gcc ata ttt aag cag aaa cta     1440
Glu Pro Asn Leu Cys Tyr Asn Ala Gln Ala Ile Phe Lys Gln Lys Leu
465                 470                 475                     480

ccc gtt gca gga gac gga gga ctt gtg tgc cct tat atg gag ttt ttt     1488
Pro Val Ala Gly Asp Gly Gly Leu Val Cys Pro Tyr Met Glu Phe Phe
                485                 490                 495

aaa aat gaa aat aat gag tta cct aaa tta cag tgg tat aag gat tgc     1536
Lys Asn Glu Asn Asn Glu Leu Pro Lys Leu Gln Trp Tyr Lys Asp Cys
                500                 505                 510

aaa cct cta ctt ctt gac aat ata cac ttt agt gga gtc aaa gat agg     1584
Lys Pro Leu Leu Leu Asp Asn Ile His Phe Ser Gly Val Lys Asp Arg
            515                 520                 525

ctc atc gtg atg aat gtg gct gaa aag cat aga ggg aac tat act tgt     1632
Leu Ile Val Met Asn Val Ala Glu Lys His Arg Gly Asn Tyr Thr Cys
        530                 535                 540

cat gca tcc tac aca tac ttg ggc aag caa tat cct att acc cgg gta     1680
His Ala Ser Tyr Thr Tyr Leu Gly Lys Gln Tyr Pro Ile Thr Arg Val
545                 550                 555                     560

ata gaa ttt att act cta gag gaa aac aaa ccc aca agg cct gtg att     1728
Ile Glu Phe Ile Thr Leu Glu Glu Asn Lys Pro Thr Arg Pro Val Ile
                565                 570                 575

gtg agc cca gct aat gag aca atg gaa gta gac ttg gga tcc cag ata     1776
Val Ser Pro Ala Asn Glu Thr Met Glu Val Asp Leu Gly Ser Gln Ile
                580                 585                 590

caa ttg atc tgt aat gtc acc ggc cag ttg agt gac att gct tac tgg     1824
Gln Leu Ile Cys Asn Val Thr Gly Gln Leu Ser Asp Ile Ala Tyr Trp
            595                 600                 605

aag tgg aat ggg tca gta att gat gaa gat gac cca gtg cta ggg gaa     1872
Lys Trp Asn Gly Ser Val Ile Asp Glu Asp Asp Pro Val Leu Gly Glu
        610                 615                 620

gac tat tac agt gtg gaa aat cct gca aac aaa aga agg agt acc ctc     1920
Asp Tyr Tyr Ser Val Glu Asn Pro Ala Asn Lys Arg Arg Ser Thr Leu
625                 630                 635                     640

atc aca gtg ctt aat ata tcg gaa att gag agt aga ttt tat aaa cat     1968
Ile Thr Val Leu Asn Ile Ser Glu Ile Glu Ser Arg Phe Tyr Lys His
                645                 650                 655

cca ttt acc tgt ttt gcc aag aat aca cat ggt ata gat gca gca tat     2016
Pro Phe Thr Cys Phe Ala Lys Asn Thr His Gly Ile Asp Ala Ala Tyr
                660                 665                 670

atc cag tta ata tat cca gtc act aat tcc gga gac aaa act cac aca     2064
Ile Gln Leu Ile Tyr Pro Val Thr Asn Ser Gly Asp Lys Thr His Thr
            675                 680                 685

tgc cca ccg tgc cca gca cct gaa ctc ctg ggg gga ccg tca gtc ttc     2112
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        Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser Val Phe
            690             695                 700

ctc ttc ccc cca aaa ccc aag gac acc ctc atg atc tcc cgg acc cct       2160
Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro
705             710             715                 720

gag gtc aca tgc gtg gtg gtg gac gtg agc cac gaa gac cct gag gtc       2208
Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val
                725             730             735

aag ttc aac tgg tac gtg gac ggc gtg gag gtg cat aat gcc aag aca       2256
Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr
                740             745             750

aag ccg cgg gag gag cag tac aac agc acg tac cgt gtg gtc agc gtc       2304
Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val
            755             760             765

ctc acc gtc ctg cac cag gac tgg ctg aat ggc aag gag tac aag tgc       2352
Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys
        770             775             780

aag gtc tcc aac aaa gcc ctc cca gcc ccc atc gag aaa acc atc tcc       2400
Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser
785             790             795                 800

aaa gcc aaa ggg cag ccc cga gaa cca cag gtg tac acc ctg ccc cca       2448
Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro
                805             810             815

tcc cgg gag gag atg acc aag aac cag gtc agc ctg acc tgc ctg gtc       2496
Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val
                820             825             830

aaa ggc ttc tat ccc agc gac atc gcc gtg gag tgg gag agc aat ggg       2544
Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly
            835             840             845

cag ccg gag aac aac tac aag acc acg cct ccc gtg ctg gac tcc gac       2592
Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp
850             855             860

ggc tcc ttc ttc ctc tat agc aag ctc acc gtg gac aag agc agg tgg       2640
Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp
865             870             875                 880

cag cag ggg aac gtc ttc tca tgc tcc gtg atg cat gag gct ctg cac       2688
Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His
                885             890             895

aac cac tac acg cag aag agc ctc tcc ctg tct ccg ggt aaa             2730
Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
            900             905             910

tga                                                                    2733

        <210> 28
        <211> 910
        <212> PRT
        <213> Homo sapiens
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44

<400> 28

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Met Val Leu Leu Trp Cys Val Val Ser Leu Tyr Phe Tyr Gly Ile Leu
 1               5                  10                  15
Gln Ser Asp Ala Ser Glu Arg Cys Asp Asp Trp Gly Leu Asp Thr Met
            20                  25                  30
Arg Gln Ile Gln Val Phe Glu Asp Glu Pro Ala Arg Ile Lys Cys Pro
        35                  40                  45
Leu Phe Glu His Phe Leu Lys Phe Asn Tyr Ser Thr Ala His Ser Ala
    50                  55                  60
Gly Leu Thr Leu Ile Trp Tyr Trp Thr Arg Gln Asp Arg Asp Leu Glu
65                  70                  75                  80
Glu Pro Ile Asn Phe Arg Leu Pro Glu Asn Arg Ile Ser Lys Glu Lys
                85                  90                  95
Asp Val Leu Trp Phe Arg Pro Thr Leu Leu Asn Asp Thr Gly Asn Tyr
            100                 105                 110
Thr Cys Met Leu Arg Asn Thr Thr Tyr Cys Ser Lys Val Ala Phe Pro
        115                 120                 125
Leu Glu Val Val Gln Lys Asp Ser Cys Phe Asn Ser Pro Met Lys Leu
    130                 135                 140
Pro Val His Lys Leu Tyr Ile Glu Tyr Gly Ile Gln Arg Ile Thr Cys
145                 150                 155                 160
Pro Asn Val Asp Gly Tyr Phe Pro Ser Ser Val Lys Pro Thr Ile Thr
                165                 170                 175
Trp Tyr Met Gly Cys Tyr Lys Ile Gln Asn Phe Asn Asn Val Ile Pro
            180                 185                 190
Glu Gly Met Asn Leu Ser Phe Leu Ile Ala Leu Ile Ser Asn Asn Gly
            195                 200                 205
Asn Tyr Thr Cys Val Val Thr Tyr Pro Glu Asn Gly Arg Thr Phe His
    210                 215                 220
Leu Thr Arg Thr Leu Thr Val Lys Val Val Gly Ser Pro Lys Asn Ala
225                 230                 235                 240
Val Pro Pro Val Ile His Ser Pro Asn Asp His Val Val Tyr Glu Lys
                245                 250                 255
Glu Pro Gly Glu Glu Leu Leu Ile Pro Cys Thr Val Tyr Phe Ser Phe
                260                 265                 270
Leu Met Asp Ser Arg Asn Glu Val Trp Trp Thr Ile Asp Gly Lys Lys
            275                 280                 285
Pro Asp Asp Ile Thr Ile Asp Val Thr Ile Asn Glu Ser Ile Ser His
    290                 295                 300
Ser Arg Thr Glu Asp Glu Thr Arg Thr Gln Ile Leu Ser Ile Lys Lys
305                 310                 315                 320
Val Thr Ser Glu Asp Leu Lys Arg Ser Tyr Val Cys His Ala Arg Ser
            325                 330                 335
Ala Lys Gly Glu Val Ala Lys Ala Ala Lys Val Lys Gln Lys Val Pro
            340                 345                 350
Ala Pro Arg Tyr Thr Val Ser Gly Gly Ala Pro Met Leu Ser Glu Ala
        355                 360                 365
Asp Lys Cys Lys Glu Arg Glu Glu Lys Ile Ile Leu Val Ser Ser Ala
    370                 375                 380
Asn Glu Ile Asp Val Arg Pro Cys Pro Leu Asn Pro Asn Glu His Lys
385                 390                 395                 400
Gly Thr Ile Thr Trp Tyr Lys Asp Asp Ser Lys Thr Pro Val Ser Thr
                405                 410                 415
Glu Gln Ala Ser Arg Ile His Gln His Lys Glu Lys Leu Trp Phe Val
            420                 425                 430
Pro Ala Lys Val Glu Asp Ser Gly His Tyr Tyr Cys Val Val Arg Asn
        435                 440                 445
Ser Ser Tyr Cys Leu Arg Ile Lys Ile Ser Ala Lys Phe Val Glu Asn
    450                 455                 460
Glu Pro Asn Leu Cys Tyr Asn Ala Gln Ala Ile Phe Lys Gln Lys Leu
```

45

```
465                    470                    475                    480
Pro Val Ala Gly Asp Gly Gly Leu Val Cys Pro Tyr Met Glu Phe Phe
                485                    490                    495
Lys Asn Glu Asn Asn Glu Leu Pro Lys Leu Gln Trp Tyr Lys Asp Cys
            500                    505                    510
Lys Pro Leu Leu Leu Asp Asn Ile His Phe Ser Gly Val Lys Asp Arg
        515                    520                    525
Leu Ile Val Met Asn Val Ala Glu Lys His Arg Gly Asn Tyr Thr Cys
    530                    535                    540
His Ala Ser Tyr Thr Tyr Leu Gly Lys Gln Tyr Pro Ile Thr Arg Val
545                    550                    555                    560
Ile Glu Phe Ile Thr Leu Glu Glu Asn Lys Pro Thr Arg Pro Val Ile
                565                    570                    575
Val Ser Pro Ala Asn Glu Thr Met Glu Val Asp Leu Gly Ser Gln Ile
        580                    585                    590
Gln Leu Ile Cys Asn Val Thr Gly Gln Leu Ser Asp Ile Ala Tyr Trp
            595                    600                    605
Lys Trp Asn Gly Ser Val Ile Asp Glu Asp Asp Pro Val Leu Gly Glu
    610                    615                    620
Asp Tyr Tyr Ser Val Glu Asn Pro Ala Asn Lys Arg Arg Ser Thr Leu
625                    630                    635                    640
Ile Thr Val Leu Asn Ile Ser Glu Ile Glu Ser Arg Phe Tyr Lys His
                645                    650                    655
Pro Phe Thr Cys Phe Ala Lys Asn Thr His Gly Ile Asp Ala Ala Tyr
            660                    665                    670
Ile Gln Leu Ile Tyr Pro Val Thr Asn Ser Gly Asp Lys Thr His Thr
        675                    680                    685
Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser Val Phe
    690                    695                    700
Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro
705                    710                    715                    720
Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val
                725                    730                    735
Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr
            740                    745                    750
Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val
        755                    760                    765
Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys
    770                    775                    780
Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser
785                    790                    795                    800
Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro
            805                    810                    815
Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val
        820                    825                    830
Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly
    835                    840                    845
Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp
850                    855                    860
Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp
865                    870                    875                    880
Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His
                885                    890                    895
Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
        900                    905                    910
```

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<210> 29
<211> 2355
<212> DNA
<213> Homo sapiens
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<220>
<221> CDS
<222> (1)...(2352)

<400> 29

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atg gtg tgg ctt tgc tct ggg ctc ctg ttc cct gtg agc tgc ctg gtc        48
Met Val Trp Leu Cys Ser Gly Leu Leu Phe Pro Val Ser Cys Leu Val
1               5                   10                  15

ctg ctg cag gtg gca agc tct ggg aac atg aag gtc ttg cag gag ccc        96
Leu Leu Gln Val Ala Ser Ser Gly Asn Met Lys Val Leu Gln Glu Pro
            20                  25                  30

acc tgc gtc tcc gac tac atg agc atc tct act tgc gag tgg aag atg       144
Thr Cys Val Ser Asp Tyr Met Ser Ile Ser Thr Cys Glu Trp Lys Met
        35                  40                  45

aat ggt ccc acc aat tgc agc acc gag ctc cgc ctg ttg tac cag ctg       192
Asn Gly Pro Thr Asn Cys Ser Thr Glu Leu Arg Leu Leu Tyr Gln Leu
        50                  55                  60

gtt ttt ctg ctc tcc gaa gcc cac acg tgt atc cct gag aac aac gga       240
Val Phe Leu Leu Ser Glu Ala His Thr Cys Ile Pro Glu Asn Asn Gly
65                  70                  75                  80

ggc gcg ggg tgc gtg tgc cac ctg ctc atg gat gac gtg gtc agt gcg       288
Gly Ala Gly Cys Val Cys His Leu Leu Met Asp Asp Val Val Ser Ala
                85                  90                  95

gat aac tat aca ctg gac ctg tgg gct ggg cag cag ctg ctg tgg aag       336
Asp Asn Tyr Thr Leu Asp Leu Trp Ala Gly Gln Gln Leu Leu Trp Lys
            100                 105                 110

ggc tcc ttc aag ccc agc gag cat gtg aaa ccc agg gcc cca gga aac       384
Gly Ser Phe Lys Pro Ser Glu His Val Lys Pro Arg Ala Pro Gly Asn
            115                 120                 125

ctg aca gtt cac acc aat gtc tcc gac act ctg ctg ctg acc tgg agc       432
Leu Thr Val His Thr Asn Val Ser Asp Thr Leu Leu Leu Thr Trp Ser
        130                 135                 140

aac ccg tat ccc cct gac aat tac ctg tat aat cat ctc acc tat gca       480
Asn Pro Tyr Pro Pro Asp Asn Tyr Leu Tyr Asn His Leu Thr Tyr Ala
145                 150                 155                 160

gtc aac att tgg agt gaa aac gac ccg gca gat ttc aga atc tat aac       528
Val Asn Ile Trp Ser Glu Asn Asp Pro Ala Asp Phe Arg Ile Tyr Asn
                165                 170                 175

gtg acc tac cta gaa ccc tcc ctc cgc atc gca gcc agc acc ctg aag       576
Val Thr Tyr Leu Glu Pro Ser Leu Arg Ile Ala Ala Ser Thr Leu Lys
            180                 185                 190

tct ggg att tcc tac agg gca cgg gtg agg gcc tgg gct cag agc tat       624
Ser Gly Ile Ser Tyr Arg Ala Arg Val Arg Ala Trp Ala Gln Ser Tyr
            195                 200                 205

aac acc acc tgg agt gag tgg agc ccc agc acc aag tgg cac aac tcc       672
Asn Thr Thr Trp Ser Glu Trp Ser Pro Ser Thr Lys Trp His Asn Ser
        210                 215                 220
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47

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tac agg gag ccc ttc gag cag tcc ggt ggg ggc ggg ggc gcc gcg cct        720
Tyr Arg Glu Pro Phe Glu Gln Ser Gly Gly Gly Gly Gly Ala Ala Pro
225             230                 235                 240

acg gaa act cag cca cct gtg aca aat ttg agt gtc tct gtt gaa aac        768
Thr Glu Thr Gln Pro Pro Val Thr Asn Leu Ser Val Ser Val Glu Asn
                245                 250                 255

ctc tgc aca gta ata tgg aca tgg aat cca ccc gag gga gcc agc tca        816
Leu Cys Thr Val Ile Trp Thr Trp Asn Pro Pro Glu Gly Ala Ser Ser
                260                 265                 270

aat tgt agt cta tgg tat ttt agt cat ttt ggc gac aaa caa gat aag        864
Asn Cys Ser Leu Trp Tyr Phe Ser His Phe Gly Asp Lys Gln Asp Lys
            275                 280                 285

aaa ata gct ccg gaa act cgt cgt tca ata gaa gta ccc ctg aat gag        912
Lys Ile Ala Pro Glu Thr Arg Arg Ser Ile Glu Val Pro Leu Asn Glu
290                 295                 300

agg att tgt ctg caa gtg ggg tcc cag tgt agc acc aat gag agt gag        960
Arg Ile Cys Leu Gln Val Gly Ser Gln Cys Ser Thr Asn Glu Ser Glu
305                 310                 315                 320

aag cct agc att ttg gtt gaa aaa tgc atc tca ccc cca gaa ggt gat       1008
Lys Pro Ser Ile Leu Val Glu Lys Cys Ile Ser Pro Pro Glu Gly Asp
                325                 330                 335

cct gag tct gct gtg act gag ctt caa tgc att tgg cac aac ctg agc       1056
Pro Glu Ser Ala Val Thr Glu Leu Gln Cys Ile Trp His Asn Leu Ser
                340                 345                 350

tac atg aag tgt tct tgg ctc cct gga agg aat acc agt ccc gac act       1104
Tyr Met Lys Cys Ser Trp Leu Pro Gly Arg Asn Thr Ser Pro Asp Thr
                355                 360                 365

aac tat act ctc tac tat tgg cac aga agc ctg gaa aaa att cat caa       1152
Asn Tyr Thr Leu Tyr Tyr Trp His Arg Ser Leu Glu Lys Ile His Gln
370                 375                 380

tgt gaa aac atc ttt aga gaa ggc caa tac ttt ggt tgt tcc ttt gat       1200
Cys Glu Asn Ile Phe Arg Glu Gly Gln Tyr Phe Gly Cys Ser Phe Asp
385                 390                 395                 400

ctg acc aaa gtg aag gat tcc agt ttt gaa caa cac agt gtc caa ata       1248
Leu Thr Lys Val Lys Asp Ser Ser Phe Glu Gln His Ser Val Gln Ile
                405                 410                 415

atg gtc aag gat aat gca gga aaa att aaa cca tcc ttc aat ata gtg       1296
Met Val Lys Asp Asn Ala Gly Lys Ile Lys Pro Ser Phe Asn Ile Val
                420                 425                 430

cct tta act tcc cgt gtg aaa cct gat cct cca cat att aaa aac ctc       1344
Pro Leu Thr Ser Arg Val Lys Pro Asp Pro Pro His Ile Lys Asn Leu
                435                 440                 445

tcc ttc cac aat gat gac cta tat gtg caa tgg gag aat cca cag aat       1392
Ser Phe His Asn Asp Asp Leu Tyr Val Gln Trp Glu Asn Pro Gln Asn
450                 455                 460

ttt att agc aga tgc cta ttt tat gaa gta gaa gtc aat aac agc caa       1440
```

```
Phe Ile Ser Arg Cys Leu Phe Tyr Glu Val Glu Val Asn Asn Ser Gln
465                 470             475                 480

act gag aca cat aat gtt ttc tac gtc caa gag gct aaa tgt gag aat     1488
Thr Glu Thr His Asn Val Phe Tyr Val Gln Glu Ala Lys Cys Glu Asn
                485             490                 495

cca gaa ttt gag aga aat gtg gag aat aca tct tgt ttc atg gtc cct     1536
Pro Glu Phe Glu Arg Asn Val Glu Asn Thr Ser Cys Phe Met Val Pro
            500             505             510

ggt gtt ctt cct gat act ttg aac aca gtc aga ata aga gtc aaa aca     1584
Gly Val Leu Pro Asp Thr Leu Asn Thr Val Arg Ile Arg Val Lys Thr
            515             520             525

aat aag tta tgc tat gag gat gac aaa ctc tgg agt aat tgg agc caa     1632
Asn Lys Leu Cys Tyr Glu Asp Asp Lys Leu Trp Ser Asn Trp Ser Gln
    530             535             540

gaa atg agt ata ggt aag aag cgc aat tcc aca acc gga gac aaa act     1680
Glu Met Ser Ile Gly Lys Lys Arg Asn Ser Thr Thr Gly Asp Lys Thr
545             550             555             560

cac aca tgc cca ccg tgc cca gca cct gaa ctc ctg ggg gga ccg tca     1728
His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser
            565             570             575

gtc ttc ctc ttc ccc cca aaa ccc aag gac acc ctc atg atc tcc cgg     1776
Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg
            580             585             590

acc cct gag gtc aca tgc gtg gtg gtg gac gtg agc cac gaa gac cct     1824
Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro
            595             600             605

gag gtc aag ttc aac tgg tac gtg gac ggc gtg gag gtg cat aat gcc     1872
Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala
    610             615             620

aag aca aag ccg cgg gag gag cag tac aac agc acg tac cgt gtg gtc     1920
Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val
625             630             635             640

agc gtc ctc acc gtc ctg cac cag gac tgg ctg aat ggc aag gag tac     1968
Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr
            645             650             655

aag tgc aag gtc tcc aac aaa gcc ctc cca gcc ccc atc gag aaa acc     2016
Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr
            660             665             670

atc tcc aaa gcc aaa ggg cag ccc cga gaa cca cag gtg tac acc ctg     2064
Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu
            675             680             685

ccc cca tcc cgg gag gag atg acc aag aac cag gtc agc ctg acc tgc     2112
Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys
            690             695             700

ctg gtc aaa ggc ttc tat ccc agc gac atc gcc gtg gag tgg gag agc     2160
Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser
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49

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aat ggg cag ccg gag aac aac tac aag acc acg cct ccc gtg ctg gac     2208
Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp
                725                     730                 735

tcc gac ggc tcc ttc ttc ctc tat agc aag ctc acc gtg gac aag agc     2256
Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser
                740                     745                 750

agg tgg cag cag ggg aac gtc ttc tca tgc tcc gtg atg cat gag gct     2304
Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala
                755                     760                 765

ctg cac aac cac tac acg cag aag agc ctc tcc ctg tct ccg ggt aaa     2352
Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
    770                     775                 780

tga                                                                  2355
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        <210> 30
        <211> 784
        <212> PRT
        <213> Homo sapiens

        <400> 30
Met Val Trp Leu Cys Ser Gly Leu Leu Phe Pro Val Ser Cys Leu Val
1               5                   10                  15
Leu Leu Gln Val Ala Ser Ser Gly Asn Met Lys Val Leu Gln Glu Pro
                20                  25                  30
Thr Cys Val Ser Asp Tyr Met Ser Ile Ser Thr Cys Glu Trp Lys Met
        35                  40                  45
Asn Gly Pro Thr Asn Cys Ser Thr Glu Leu Arg Leu Leu Tyr Gln Leu
    50                  55                  60
Val Phe Leu Leu Ser Glu Ala His Thr Cys Ile Pro Glu Asn Asn Gly
65                  70                  75                  80
Gly Ala Gly Cys Val Cys His Leu Leu Met Asp Asp Val Val Ser Ala
            85                  90                  95
Asp Asn Tyr Thr Leu Asp Leu Trp Ala Gly Gln Gln Leu Leu Trp Lys
            100                 105                 110
Gly Ser Phe Lys Pro Ser Glu His Val Lys Pro Arg Ala Pro Gly Asn
        115                 120                 125
Leu Thr Val His Thr Asn Val Ser Asp Thr Leu Leu Leu Thr Trp Ser
    130                 135                 140
Asn Pro Tyr Pro Pro Asp Asn Tyr Leu Tyr Asn His Leu Thr Tyr Ala
145                 150                 155                 160
Val Asn Ile Trp Ser Glu Asn Asp Pro Ala Asp Phe Arg Ile Tyr Asn
            165                 170                 175
Val Thr Tyr Leu Glu Pro Ser Leu Arg Ile Ala Ala Ser Thr Leu Lys
            180                 185                 190
Ser Gly Ile Ser Tyr Arg Ala Arg Val Arg Ala Trp Ala Gln Ser Tyr
        195                 200                 205
Asn Thr Thr Trp Ser Glu Trp Ser Pro Ser Thr Lys Trp His Asn Ser
        210                 215                 220
Tyr Arg Glu Pro Phe Glu Gln Ser Gly Gly Gly Gly Ala Ala Pro
225                 230                 235                 240
Thr Glu Thr Gln Pro Pro Val Thr Asn Leu Ser Val Ser Val Glu Asn
                245                 250                 255
Leu Cys Thr Val Ile Trp Thr Trp Asn Pro Pro Glu Gly Ala Ser Ser
            260                 265                 270
Asn Cys Ser Leu Trp Tyr Phe Ser His Phe Gly Asp Lys Gln Asp Lys
```

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            275                      280                      285
Lys Ile Ala Pro Glu Thr Arg Arg Ser Ile Glu Val Pro Leu Asn Glu
    290                      295                      300
Arg Ile Cys Leu Gln Val Gly Ser Gln Cys Ser Thr Asn Glu Ser Glu
305                      310                      315                      320
Lys Pro Ser Ile Leu Val Glu Lys Cys Ile Ser Pro Pro Glu Gly Asp
                325                      330                      335
Pro Glu Ser Ala Val Thr Glu Leu Gln Cys Ile Trp His Asn Leu Ser
                340                      345                      350
Tyr Met Lys Cys Ser Trp Leu Pro Gly Arg Asn Thr Ser Pro Asp Thr
                355                      360                      365
Asn Tyr Thr Leu Tyr Tyr Trp His Arg Ser Leu Glu Lys Ile His Gln
    370                      375                      380
Cys Glu Asn Ile Phe Arg Glu Gly Gln Tyr Phe Gly Cys Ser Phe Asp
385                      390                      395                      400
Leu Thr Lys Val Lys Asp Ser Ser Phe Glu Gln His Ser Val Gln Ile
                405                      410                      415
Met Val Lys Asp Asn Ala Gly Lys Ile Lys Pro Ser Phe Asn Ile Val
                420                      425                      430
Pro Leu Thr Ser Arg Val Lys Pro Asp Pro Pro His Ile Lys Asn Leu
                435                      440                      445
Ser Phe His Asn Asp Asp Leu Tyr Val Gln Trp Glu Asn Pro Gln Asn
    450                      455                      460
Phe Ile Ser Arg Cys Leu Phe Tyr Glu Val Glu Val Asn Asn Ser Gln
465                      470                      475                      480
Thr Glu Thr His Asn Val Phe Tyr Val Gln Glu Ala Lys Cys Glu Asn
                485                      490                      495
Pro Glu Phe Glu Arg Asn Val Glu Asn Thr Ser Cys Phe Met Val Pro
                500                      505                      510
Gly Val Leu Pro Asp Thr Leu Asn Thr Val Arg Ile Arg Val Lys Thr
                515                      520                      525
Asn Lys Leu Cys Tyr Glu Asp Asp Lys Leu Trp Ser Asn Trp Ser Gln
    530                      535                      540
Glu Met Ser Ile Gly Lys Lys Arg Asn Ser Thr Thr Gly Asp Lys Thr
545                      550                      555                      560
His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser
                565                      570                      575
Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg
                580                      585                      590
Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro
    595                      600                      605
Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala
    610                      615                      620
Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val
625                      630                      635                      640
Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr
                645                      650                      655
Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr
                660                      665                      670
Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu
                675                      680                      685
Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys
    690                      695                      700
Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser
705                      710                      715                      720
Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp
                725                      730                      735
Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser
                740                      745                      750
Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala
    755                      760                      765
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Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
    770             775              780

        <210> 31
        <211> 2382
        <212> DNA
        <213> Homo sapiens

        <220>
        <221> CDS
        <222> (1)...(2379)

        <400> 31
atg gtg tgg ccg gcg cgg ctc tgc ggg ctg tgg gcg ctg ctg ctc tgc        48
Met Val Trp Pro Ala Arg Leu Cys Gly Leu Trp Ala Leu Leu Leu Cys
1               5                   10                  15

gcc ggc ggc ggg ggc ggg ggc ggg ggc gcc gcg cct acg gaa act cag        96
Ala Gly Gly Gly Gly Gly Gly Gly Gly Ala Ala Pro Thr Glu Thr Gln
            20                  25                  30

cca cct gtg aca aat ttg agt gtc tct gtt gaa aac ctc tgc aca gta       144
Pro Pro Val Thr Asn Leu Ser Val Ser Val Glu Asn Leu Cys Thr Val
        35                  40                  45

ata tgg aca tgg aat cca ccc gag gga gcc agc tca aat tgt agt cta       192
Ile Trp Thr Trp Asn Pro Pro Glu Gly Ala Ser Ser Asn Cys Ser Leu
    50                  55                  60

tgg tat ttt agt cat ttt ggc gac aaa caa gat aag aaa ata gct ccg       240
Trp Tyr Phe Ser His Phe Gly Asp Lys Gln Asp Lys Lys Ile Ala Pro
65                  70                  75                  80

gaa act cgt cgt tca ata gaa gta ccc ctg aat gag agg att tgt ctg       288
Glu Thr Arg Arg Ser Ile Glu Val Pro Leu Asn Glu Arg Ile Cys Leu
                85                  90                  95

caa gtg ggg tcc cag tgt agc acc aat gag agt gag aag cct agc att       336
Gln Val Gly Ser Gln Cys Ser Thr Asn Glu Ser Glu Lys Pro Ser Ile
            100                 105                 110

ttg gtt gaa aaa tgc atc tca ccc cca gaa ggt gat cct gag tct gct       384
Leu Val Glu Lys Cys Ile Ser Pro Pro Glu Gly Asp Pro Glu Ser Ala
        115                 120                 125

gtg act gag ctt caa tgc att tgg cac aac ctg agc tac atg aag tgt       432
Val Thr Glu Leu Gln Cys Ile Trp His Asn Leu Ser Tyr Met Lys Cys
    130                 135                 140

tct tgg ctc cct gga agg aat acc agt ccc gac act aac tat act ctc       480
Ser Trp Leu Pro Gly Arg Asn Thr Ser Pro Asp Thr Asn Tyr Thr Leu
145                 150                 155                 160

tac tat tgg cac aga agc ctg gaa aaa att cat caa tgt gaa aac atc       528
Tyr Tyr Trp His Arg Ser Leu Glu Lys Ile His Gln Cys Glu Asn Ile
                165                 170                 175

ttt aga gaa ggc caa tac ttt ggt tgt tcc ttt gat ctg acc aaa gtg       576
Phe Arg Glu Gly Gln Tyr Phe Gly Cys Ser Phe Asp Leu Thr Lys Val
            180                 185                 190
```

52

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aag gat tcc agt ttt gaa caa cac agt gtc caa ata atg gtc aag gat          624
Lys Asp Ser Ser Phe Glu Gln His Ser Val Gln Ile Met Val Lys Asp
        195               200               205

aat gca gga aaa att aaa cca tcc ttc aat ata gtg cct tta act tcc          672
Asn Ala Gly Lys Ile Lys Pro Ser Phe Asn Ile Val Pro Leu Thr Ser
        210               215               220

cgt gtg aaa cct gat cct cca cat att aaa aac ctc tcc ttc cac aat          720
Arg Val Lys Pro Asp Pro Pro His Ile Lys Asn Leu Ser Phe His Asn
225               230               235               240

gat gac cta tat gtg caa tgg gag aat cca cag aat ttt att agc aga          768
Asp Asp Leu Tyr Val Gln Trp Glu Asn Pro Gln Asn Phe Ile Ser Arg
            245               250               255

tgc cta ttt tat gaa gta gaa gtc aat aac agc caa act gag aca cat          816
Cys Leu Phe Tyr Glu Val Glu Val Asn Asn Ser Gln Thr Glu Thr His
            260               265               270

aat gtt ttc tac gtc caa gag gct aaa tgt gag aat cca gaa ttt gag          864
Asn Val Phe Tyr Val Gln Glu Ala Lys Cys Glu Asn Pro Glu Phe Glu
            275               280               285

aga aat gtg gag aat aca tct tgt ttc atg gtc cct ggt gtt ctt cct          912
Arg Asn Val Glu Asn Thr Ser Cys Phe Met Val Pro Gly Val Leu Pro
        290               295               300

gat act ttg aac aca gtc aga ata aga gtc aaa aca aat aag tta tgc          960
Asp Thr Leu Asn Thr Val Arg Ile Arg Val Lys Thr Asn Lys Leu Cys
305               310               315               320

tat gag gat gac aaa ctc tgg agt aat tgg agc caa gaa atg agt ata         1008
Tyr Glu Asp Asp Lys Leu Trp Ser Asn Trp Ser Gln Glu Met Ser Ile
            325               330               335

ggt aag aag cgc aat tcc aca ggc gcg cct agt ggt gga ggt ggc cgg         1056
Gly Lys Lys Arg Asn Ser Thr Gly Ala Pro Ser Gly Gly Gly Gly Arg
            340               345               350

ccc gca agc tct ggg aac atg aag gtc ttg cag gag ccc acc tgc gtc         1104
Pro Ala Ser Ser Gly Asn Met Lys Val Leu Gln Glu Pro Thr Cys Val
            355               360               365

tcc gac tac atg agc atc tct act tgc gag tgg aag atg aat ggt ccc         1152
Ser Asp Tyr Met Ser Ile Ser Thr Cys Glu Trp Lys Met Asn Gly Pro
            370               375               380

acc aat tgc agc acc gag ctc cgc ctg ttg tac cag ctg gtt ttt ctg         1200
Thr Asn Cys Ser Thr Glu Leu Arg Leu Leu Tyr Gln Leu Val Phe Leu
385               390               395               400

ctc tcc gaa gcc cac acg tgt atc cct gag aac aac gga ggc gcg ggg         1248
Leu Ser Glu Ala His Thr Cys Ile Pro Glu Asn Asn Gly Gly Ala Gly
            405               410               415

tgc gtg tgc cac ctg ctc atg gat gac gtg gtc agt gcg gat aac tat         1296
Cys Val Cys His Leu Leu Met Asp Asp Val Val Ser Ala Asp Asn Tyr
            420               425               430

aca ctg gac ctg tgg gct ggg cag cag ctg ctg tgg aag ggc tcc ttc         1344
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Thr Leu Asp Leu Trp Ala Gly Gln Gln Leu Leu Trp Lys Gly Ser Phe
        435                 440                 445

aag ccc agc gag cat gtg aaa ccc agg gcc cca gga aac ctg aca gtt    1392
Lys Pro Ser Glu His Val Lys Pro Arg Ala Pro Gly Asn Leu Thr Val
        450                 455                 460

cac acc aat gtc tcc gac act ctg ctg ctg acc tgg agc aac ccg tat    1440
His Thr Asn Val Ser Asp Thr Leu Leu Leu Thr Trp Ser Asn Pro Tyr
465                 470                 475                 480

ccc cct gac aat tac ctg tat aat cat ctc acc tat gca gtc aac att    1488
Pro Pro Asp Asn Tyr Leu Tyr Asn His Leu Thr Tyr Ala Val Asn Ile
                485                 490                 495

tgg agt gaa aac gac ccg gca gat ttc aga atc tat aac gtg acc tac    1536
Trp Ser Glu Asn Asp Pro Ala Asp Phe Arg Ile Tyr Asn Val Thr Tyr
            500                 505                 510

cta gaa ccc tcc ctc cgc atc gca gcc agc acc ctg aag tct ggg att    1584
Leu Glu Pro Ser Leu Arg Ile Ala Ala Ser Thr Leu Lys Ser Gly Ile
            515                 520                 525

tcc tac agg gca cgg gtg agg gcc tgg gct cag tgc tat aac acc acc    1632
Ser Tyr Arg Ala Arg Val Arg Ala Trp Ala Gln Cys Tyr Asn Thr Thr
        530                 535                 540

tgg agt gag tgg agc ccc agc acc aag tgg cac aac tcc tac agg gag    1680
Trp Ser Glu Trp Ser Pro Ser Thr Lys Trp His Asn Ser Tyr Arg Glu
545                 550                 555                 560

ccc ttc gag cag tcc gga gac aaa act cac aca tgc cca ccg tgc cca    1728
Pro Phe Glu Gln Ser Gly Asp Lys Thr His Thr Cys Pro Pro Cys Pro
                565                 570                 575

gca cct gaa ctc ctg ggg gga ccg tca gtc ttc ctc ttc ccc cca aaa    1776
Ala Pro Glu Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys
            580                 585                 590

ccc aag gac acc ctc atg atc tcc cgg acc cct gag gtc aca tgc gtg    1824
Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val
            595                 600                 605

gtg gtg gac gtg agc cac gaa gac cct gag gtc aag ttc aac tgg tac    1872
Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr
        610                 615                 620

gtg gac ggc gtg gag gtg cat aat gcc aag aca aag ccg cgg gag gag    1920
Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu
625                 630                 635                 640

cag tac aac agc acg tac cgt gtg gtc agc gtc ctc acc gtc ctg cac    1968
Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His
                645                 650                 655

cag gac tgg ctg aat ggc aag gag tac aag tgc aag gtc tcc aac aaa    2016
Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys
            660                 665                 670

gcc ctc cca gcc ccc atc gag aaa acc atc tcc aaa gcc aaa ggg cag    2064
Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln
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54

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ccc cga gaa cca cag gtg tac acc ctg ccc cca tcc cgg gag gag atg    2112
Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met
    690             695             700

acc aag aac cag gtc agc ctg acc tgc ctg gtc aaa ggc ttc tat ccc    2160
Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro
705             710             715             720

agc gac atc gcc gtg gag tgg gag agc aat ggg cag ccg gag aac aac    2208
Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn
            725             730             735

tac aag acc acg cct ccc gtg ctg gac tcc gac ggc tcc ttc ttc ctc    2256
Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu
            740             745             750

tat agc aag ctc acc gtg gac aag agc agg tgg cag cag ggg aac gtc    2304
Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val
            755             760             765

ttc tca tgc tcc gtg atg cat gag gct ctg cac aac cac tac acg cag    2352
Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln
            770             775             780

aag agc ctc tcc ctg tct ccg ggt aaa tga                            2382
Lys Ser Leu Ser Leu Ser Pro Gly Lys
785             790
```

```
<210> 32
<211> 793
<212> PRT
<213> Homo sapiens

<400> 32
Met Val Trp Pro Ala Arg Leu Cys Gly Leu Trp Ala Leu Leu Leu Cys
1               5               10                  15
Ala Gly Gly Gly Gly Gly Gly Gly Ala Ala Pro Thr Glu Thr Gln
        20              25                  30
Pro Pro Val Thr Asn Leu Ser Val Ser Val Glu Asn Leu Cys Thr Val
        35              40                  45
Ile Trp Thr Trp Asn Pro Pro Glu Gly Ala Ser Ser Asn Cys Ser Leu
        50              55              60
Trp Tyr Phe Ser His Phe Gly Asp Lys Gln Asp Lys Lys Ile Ala Pro
65              70              75                  80
Glu Thr Arg Arg Ser Ile Glu Val Pro Leu Asn Glu Arg Ile Cys Leu
            85              90              95
Gln Val Gly Ser Gln Cys Ser Thr Asn Glu Ser Glu Lys Pro Ser Ile
            100             105             110
Leu Val Glu Lys Cys Ile Ser Pro Pro Glu Gly Asp Pro Glu Ser Ala
            115             120             125
Val Thr Glu Leu Gln Cys Ile Trp His Asn Leu Ser Tyr Met Lys Cys
            130             135             140
Ser Trp Leu Pro Gly Arg Asn Thr Ser Pro Asp Thr Asn Tyr Thr Leu
145             150             155             160
Tyr Tyr Trp His Arg Ser Leu Glu Lys Ile His Gln Cys Glu Asn Ile
            165             170             175
Phe Arg Glu Gly Gln Tyr Phe Gly Cys Ser Phe Asp Leu Thr Lys Val
            180             185             190
```

55

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Lys Asp Ser Ser Phe Glu Gln His Ser Val Gln Ile Met Val Lys Asp
        195                 200                 205
Asn Ala Gly Lys Ile Lys Pro Ser Phe Asn Ile Val Pro Leu Thr Ser
    210                 215                 220
Arg Val Lys Pro Asp Pro Pro His Ile Lys Asn Leu Ser Phe His Asn
225                 230                 235                 240
Asp Asp Leu Tyr Val Gln Trp Glu Asn Pro Gln Asn Phe Ile Ser Arg
                245                 250                 255
Cys Leu Phe Tyr Glu Val Glu Val Asn Asn Ser Gln Thr Glu Thr His
            260                 265                 270
Asn Val Phe Tyr Val Gln Glu Ala Lys Cys Glu Asn Pro Glu Phe Glu
        275                 280                 285
Arg Asn Val Glu Asn Thr Ser Cys Phe Met Val Pro Gly Val Leu Pro
    290                 295                 300
Asp Thr Leu Asn Thr Val Arg Ile Arg Val Lys Thr Asn Lys Leu Cys
305                 310                 315                 320
Tyr Glu Asp Asp Lys Leu Trp Ser Asn Trp Ser Gln Glu Met Ser Ile
                325                 330                 335
Gly Lys Lys Arg Asn Ser Thr Gly Ala Pro Ser Gly Gly Gly Gly Arg
            340                 345                 350
Pro Ala Ser Ser Gly Asn Met Lys Val Leu Gln Glu Pro Thr Cys Val
        355                 360                 365
Ser Asp Tyr Met Ser Ile Ser Thr Cys Glu Trp Lys Met Asn Gly Pro
    370                 375                 380
Thr Asn Cys Ser Thr Glu Leu Arg Leu Leu Tyr Gln Leu Val Phe Leu
385                 390                 395                 400
Leu Ser Glu Ala His Thr Cys Ile Pro Glu Asn Asn Gly Gly Ala Gly
                405                 410                 415
Cys Val Cys His Leu Leu Met Asp Asp Val Val Ser Ala Asp Asn Tyr
            420                 425                 430
Thr Leu Asp Leu Trp Ala Gly Gln Gln Leu Leu Trp Lys Gly Ser Phe
        435                 440                 445
Lys Pro Ser Glu His Val Lys Pro Arg Ala Pro Gly Asn Leu Thr Val
    450                 455                 460
His Thr Asn Val Ser Asp Thr Leu Leu Leu Thr Trp Ser Asn Pro Tyr
465                 470                 475                 480
Pro Pro Asp Asn Tyr Leu Tyr Asn His Leu Thr Tyr Ala Val Asn Ile
                485                 490                 495
Trp Ser Glu Asn Asp Pro Ala Asp Phe Arg Ile Tyr Asn Val Thr Tyr
            500                 505                 510
Leu Glu Pro Ser Leu Arg Ile Ala Ala Ser Thr Leu Lys Ser Gly Ile
        515                 520                 525
Ser Tyr Arg Ala Arg Val Arg Ala Trp Ala Gln Cys Tyr Asn Thr Thr
    530                 535                 540
Trp Ser Glu Trp Ser Pro Ser Thr Lys Trp His Asn Ser Tyr Arg Glu
545                 550                 555                 560
Pro Phe Glu Gln Ser Gly Asp Lys Thr His Thr Cys Pro Pro Cys Pro
                565                 570                 575
Ala Pro Glu Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys
            580                 585                 590
Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val
            595                 600                 605
Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr
        610                 615                 620
Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu
625                 630                 635                 640
Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His
                645                 650                 655
Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys
            660                 665                 670
Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln
```

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          675                    680              685
Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met
      690                    695              700
Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro
705                    710              715                720
Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn
                  725              730                  735
Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu
              740              745                  750
Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val
          755              760              765
Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln
      770                  775              780
Lys Ser Leu Ser Leu Ser Pro Gly Lys
785                  790
```